

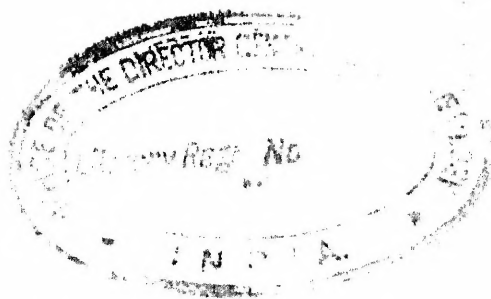
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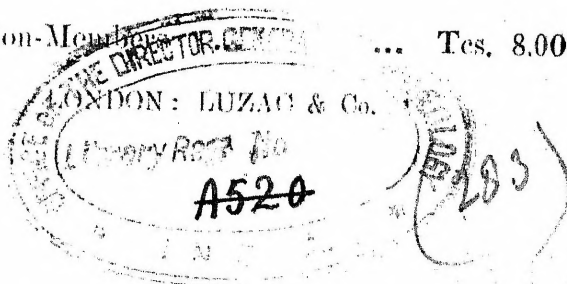
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THE SIAM SOCIETY

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For the Investigation and Encouragement of Arts, Science
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Errata.

Page 3, line 16 from top, read: the construction of *this* part
of the line

„ 4, line 5 from top, read: *point*

„ 11, line 3 from top, read: *identify*

„ 35, list of members resigned, .
read H. C. Andersen, not A. C. Anderson

An Excursion to Phimai

a temple city in the Khorat province.

Lecture delivered before the Siam Society on 16th June 1920

by

MAJOR ERIK SEIDENFADEN

late of the Provincial Gendarmerie.

Though we in Siam cannot boast of such splendid and mighty temple ruins as those of Angkor Thom or Angkor Wat in Cambodia, still we have got some which are well worth visiting as for instance those in Sukhothai, Sawankhalok, Lopburi or Phimai—not to speak of others, which to a certain point are still finer, but are far away in the wildernesses of Southeastern Khorat or at the frontier of the Ubon province and Cambodia. Lying in the midst of virgin forest they defy all others than the indefatigable traveller who is prepared to spend weeks in visiting them.

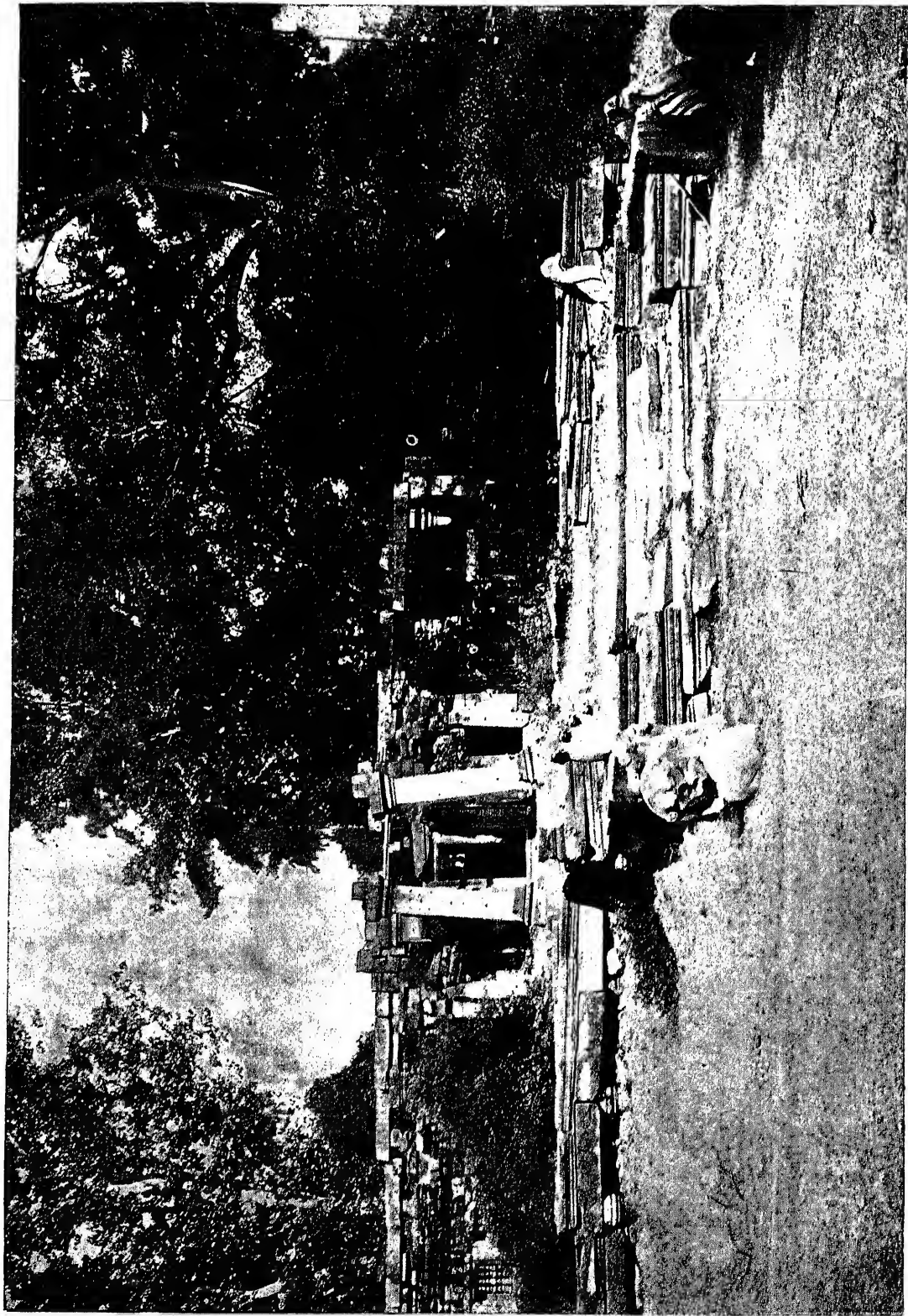
Phimai however is not too far away, and can easily be visited in the course of a few days, being one of the finest examples of Khm̄r architecture which we possess in Siam. It is about the temple in Phimai and how to reach it, that this paper is going to tell.

Phimai or Vimāya as its old name sounds is situated in the province of Nakhon Rajasima (also called Khorāt) about 56 kilometres or 35 miles to N. E. of the provincial capital of the same name. Phimai was no doubt formerly, i. e. in the days when the Cambodian sway extended over the greater part of the present Siam, the capital of a big province and the seat of a vice-roy,—subject directly to the Khm̄r king in Angkor Thom (Nakhon Luang of the Siamese). This fact is proved, not only by several inscriptions on the walls of its grand temple, but also by the existence of the remains of a great chaussée running from Phimai in a S. E. direction down over the Dangrek hills (that formidable barrier between the N. E. Siamese plateau and Cambodia as well as the Prachin province) to Angkor the Great, the ancient and glorious capital of the Khm̄r.

As this paper is intended to serve as a kind of advertisement for the Phimai ruins and thereby induce people interested in architecture, art and archaeology to visit them, I shall now proceed to explain how you are to travel to Phimai. First, a word about equipment: Take with you a campbed, folding table, chairs, cooking utensils some tinned provisions, a cook and a "boy;" a small tent will also come in handy. The best time for doing the trip is the cold season i. e. Decb-February; March-April being too hot. Starting from Bangkok by the train leaving at 9. 48 you arrive in Khorāt at 18. 08. The first part of the journey is not very interesting, the railway running due North through a flat and swampy country, intersected with numerous klongs and studded with small lakes and ponds, a home of innumerable waterfowls and a paradise for the birdshooting sportsman. Here and there you see clumps of feathered bambus hiding small villages, and on the banks of the klongs the poor huts belonging to the tillers of the soil, who mostly are in the employ of the big landowners living in Bangkok. Sometimes you get a glimpse of the broad glittering Mōnām Chāo Phraya stretching away on your left hand and if you travel in the season when the rice is being brought down to Bangkok from upcountry, you may see passing down the river whole fleets of riceboats which with their bellying white sails resemble flocks of giant seagulls. You pass Bang Pa In, an idyllic island whereon the King's summer palace is situated, and after nearly two hours you arrive in Ayudhya, Siam's old capital (A. D. 1350-1767). From the railway line you just get, to the West, a glimpse of the island on which the oldest city Dvāravati (Thēvaravadi in Siamese) was built by the early Indian settlers. To the East you look over a vast plain studded with ancient Prangs and Phrachedis, huge reddish piles of masonry overgrown with green vegetation which in the golden days of Ayudhya were rich and splendid temples, since spoiled by the Burmese those true disciples of Huns and Vandals, when they in 1767 conquered and destroyed the old capital. But the train rolls on and the line now swings towards N. E. still passing over lowlying ground but soon afterwards, at Ban Phra Kēo, we meet the high and dry land, the old coastline in reality, of about 1500 years ago. At Ban Pha Chi junction the

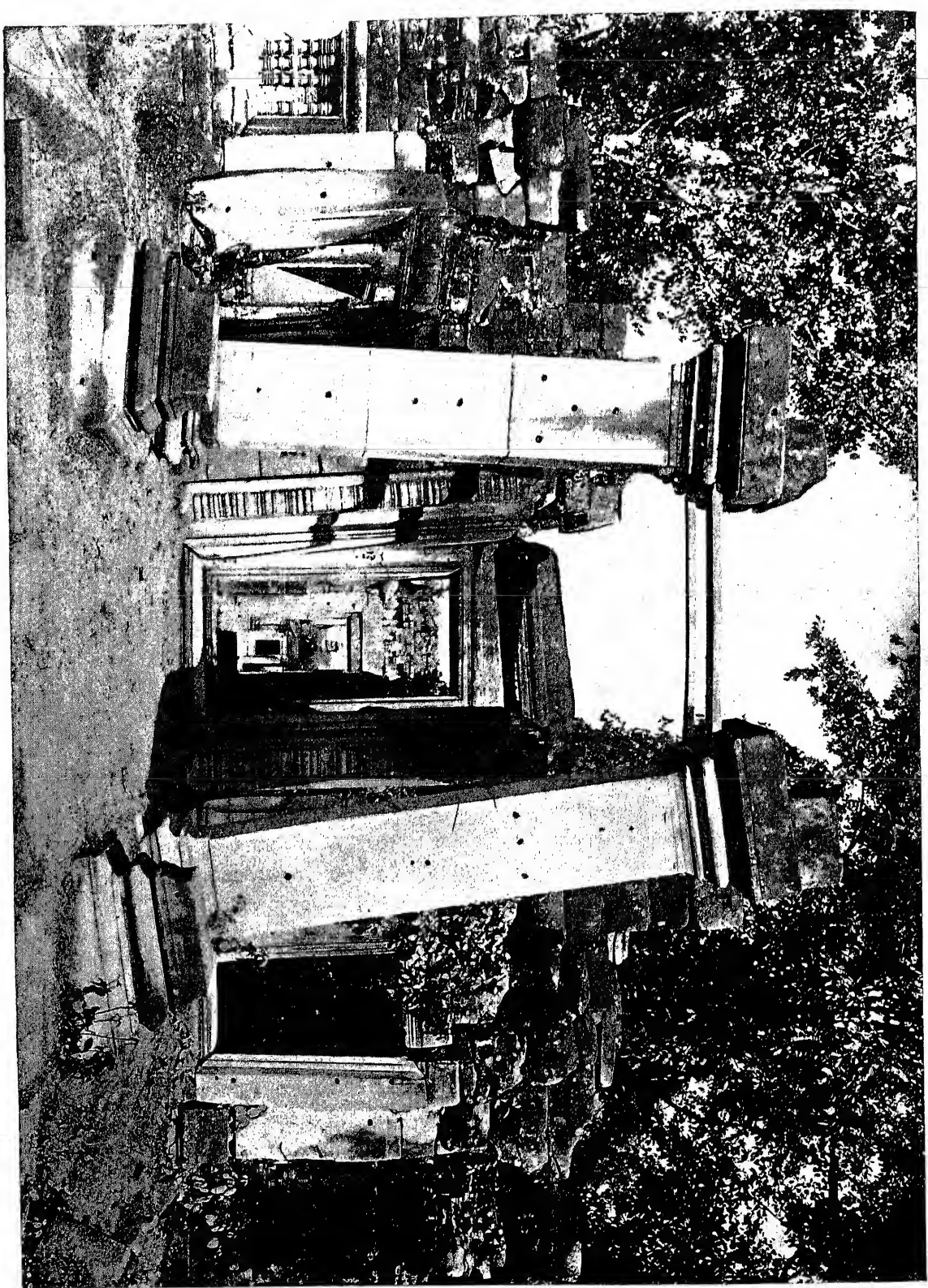
Northern railway branches off to the left while we continue going N. E. After having passed Saraburi ("the town at the sea" the name again reminding us about that not so very distant period when the sea rolled its waves near to this place) the landscape changes its character entirely and becomes hilly. To the North you see the outlines of Khao Phra Buddha Bāt the famous place of pilgrimage and now we are nearing the Dangrek mountains, the ramparts which to the West and South surround the four big North eastern provinces of Siam. In Gengkoi another locomotive is harnessed to our train to assist in hauling us up over the hills to the plateau of Khorāt. Up it goes through the rugged hills covered with impenetrable virgin jungle. Here and there a passage has been blasted through the black or red rocks, and sometimes the line has to make such curves when rounding certain hill promontories that you can see both the locomotives and the last waggon of the train at the same time. The construction of the part of the line, i.e. from Gengkoi, was started in 1897 and the town of Khorāt was reached, finally in 1900. The building of that stretch of the railway which climbs up through the jungle covered hills, cost the lives of several thousand Chinese coolies and also of not a few European engineers and overseers. When you pass the station of Muok Lek (which gets its name from a peculiarly shaped solitary hill called Khao Muok Lek i.e. "the ironhatted mountain," near by), you see the tomb of a young Danish engineer, K. L. Rahbek, who died of fever and was interred here. The huge mortality during the construction of the railway was due to the jungle fevers prevalent in this region, the hills being clothed in dense jungle or virgin forest called "Dong Phraya Fai" (i.e. "the forest of the Lord of fire") which has from olden days had a bad reputation for being a feverridden and very unhealthy one. The train climbs on and on, the scenery shifts rapidly, sometimes black and menacing walls of rock encompass the track but sometimes the hills recede, and you then look to the North and South over the top of the dark, and luxurious forest to a confusion of distant chains and summits wrapped in a blue haze. Though the forest presents a most luxuriant and wild scenery with its true giants of secular trees hung with lianas, orchids or fantastic creepers, you seldom see any animal life with the exception of small

clouds of butterflies. Still there is no doubt that in the mysterious depths of the forest are hosts of big game, wild elephants (which you are not allowed to shoot), tigers, leopards, samburs, wild cattle and even rhinoceroses, indeed Dong Phraya Fai is the paradise of big game hunters. At Pāk Sok the line reaches its highest points: 396.5 metres or about 1300 feet over the sea level. From this point the ground slopes gently down to the city of Khorāt which is only 175 metres or 616 feet over the sea level. Before the construction of the railway a journey from Bangkok to Khorāt was a rather formidable task, the first part from Bangkok to Saraburi or Gengkoi was easily made by boat, but thereafter you had to travel by elephant, pony or by foot, the luggage or merchandise being transported on the back of pack-bullocks. The trip from Gengkoi to Khorāt or vice versa generally took about 11 days and was exceedingly tiring for both men and beasts. Just before emerging from the big forest the train pulls up at a small station called Nakhon Chantu'k. Not far away in the jungle are the ramparts of an old city now deserted, the army keeps a pony stud here. Near by there is also an old copper mine, the working of which has been given up as unprofitable long ago. After this place the country opens up and paddy fields and villages become more and more numerous as we are nearing Khorāt, the line twice passing over Lam Takong an affluent to the Mūn river which born in the wilds of Dong Phraya Fai flows in an Easterly direction and passing North of Khorāt town falls into the Mun somewhere East of the town. Before reaching Khorāt we pass a station called Sung No'n, i. e. the tall hill, near which are lying two ancient cities one to N. W., the other to the East of it: the former is called Mu'ang Sēmarāng, the latter Mu'ang Khorāt Kāo, in both of which are found archæological remains of considerable interest. Several temple ruins and a huge resting Buddha all made of sandstone and of Cambodian origin are also to be seen there. These old cities may have been Cambodian fortresses dating from a period long before the present town of Khorāt was built. In Khorāt you may stay at the railway station or better, if you can arrange so with the French Legation in Bangkok, at the unoccupied consulate building which is not far from the station and quite a comfortable place at that. The town itself is not very interesting nor picturesque being too dirty.



Great Southern entrance (gopura), exterior temple enceinte.

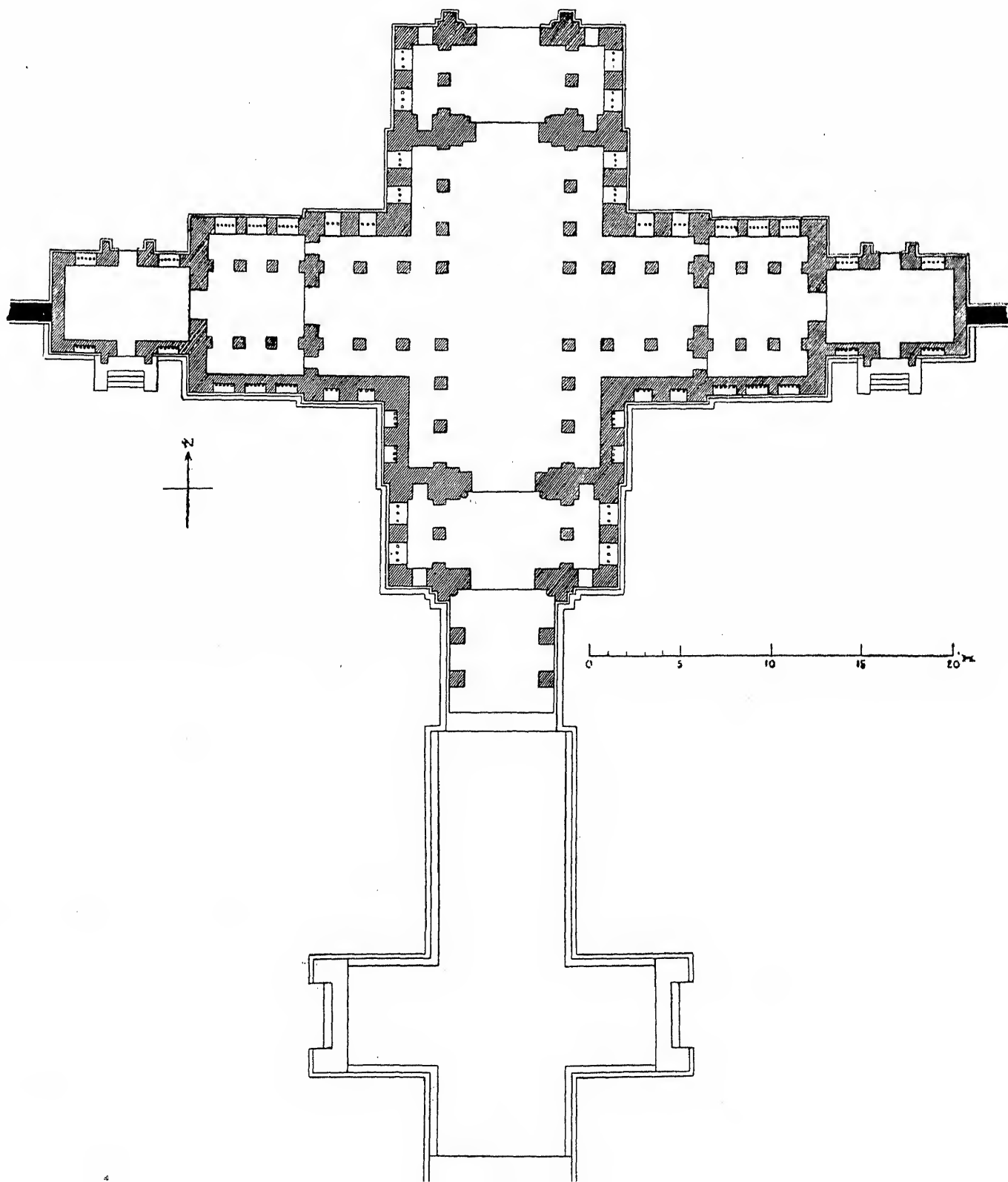
Great Southern entrance (gopura), exterior temple enceinte.

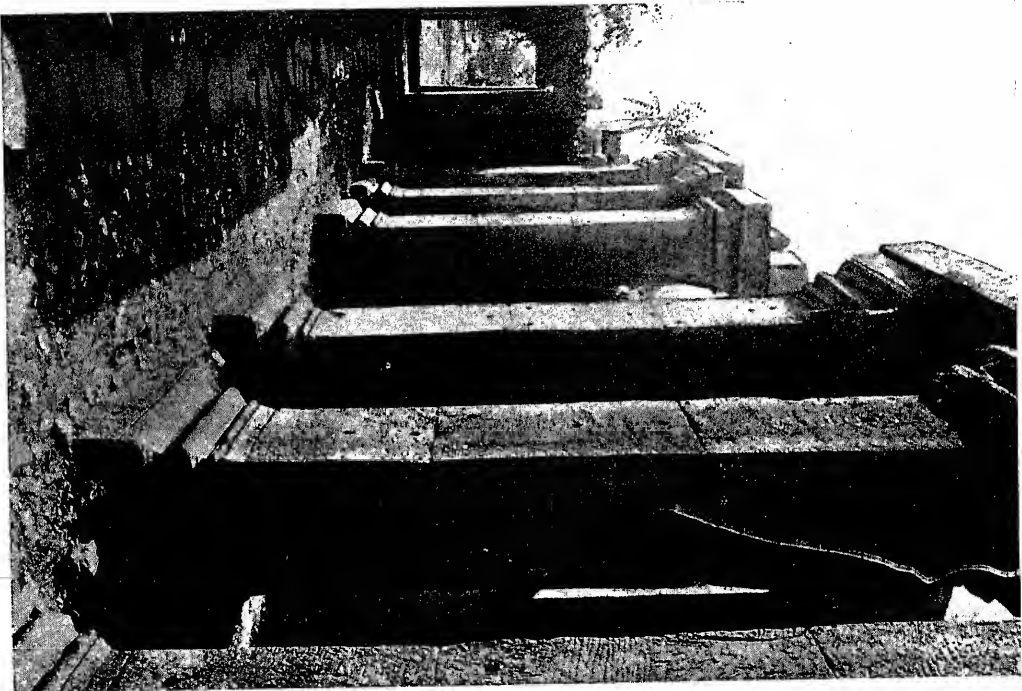


and its roads always in a pitiful state of disrepair. The population seems mainly to consist of Chinese in whose hands is the whole trade of N. E. Siam, the town being so far the terminus of the railway from Bangkok. To Khorat arrive, and from it too start the innumerable caravans of bullock carts which bring the products from the four provinces of Khorāt, Ubon, Roi Etch and Udorn returning to the same loaded with all sorts of foreign goods. From Khorāt also is exported annually a great number of cattle and pigs destined for consumption in Bangkok or for export to Singapore. The non-Chinese population of the town—which really is the most numerous—is called Thai Khorāt or formerly Lāo Klāng, i. e. the middle Lāo, but is for the greater part of Cambodian origin mixed with Thai from the Mēnām valley and especially Lāo from the region of Wiengchan sprinkled with some Mohn exiles. The last named have quite forgotten their mother tongue but not their ancestral spirits who are still worshipped fervently here even by those who are not of Mohn origin: in fact the “phi’s” of Khōrat are “Phi Mohn.”

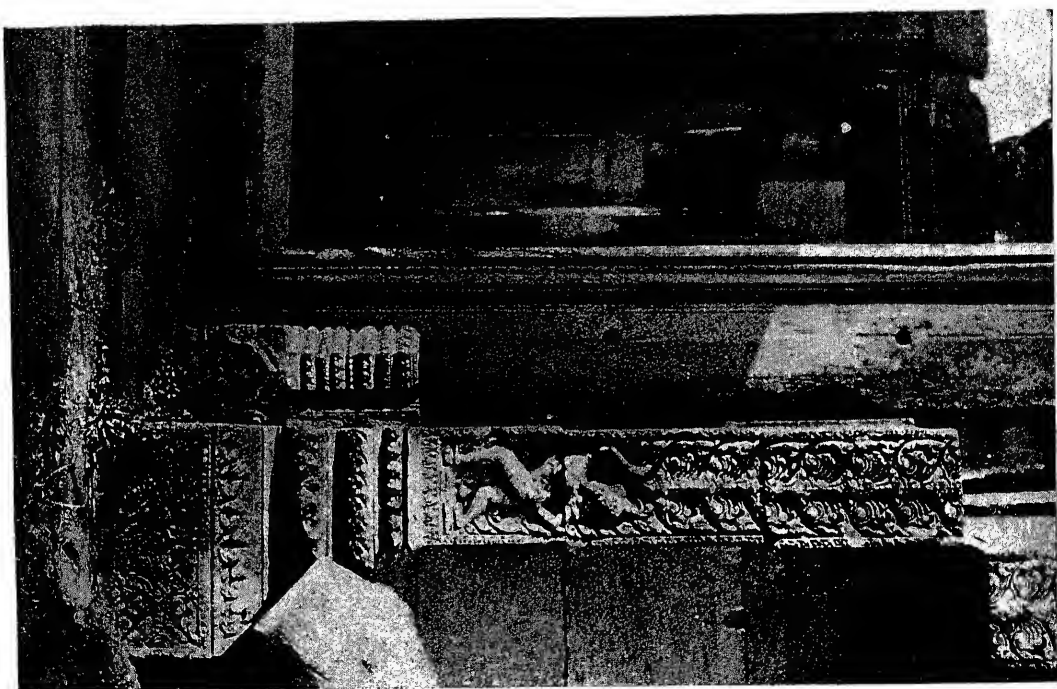
The present city was built during the reign of King Phra Narai Mahārāj (1656-1688) who let French Military Engineers construct the fortifications, which consist of earthen ramparts crowned in part with walls of brick or sandstone, provided with bastions, broad moats, still partly filled with water, and four gates of which last only the Western one has been preserved entirely, looking quite picturesque with its superimposed tower. In Wat Klāng and at the Sān Chāo Lak Mu’ang are interesting relics from the Khmēr time, namely statues of Narāyana (Vishnu), Ganes’a, Nāga’s, etc. pointing to the existence of a Brahmanical sanctuary and a Khmēr settlement long before the foundation of present day Khorāt. The walled part of the town cannot hold the entire population, and near the railway station lies the suburb of Paru with its flourishing fruit gardens, the soil of which is nourished by a sort of irrigation system, while between the station and the western city wall lies another quarter called Poh Klāng mainly consisting of a street $1\frac{1}{2}$ kilometer long, lined on both sides with a multitude of Chinese shops. Most of the government officials live in their own quarter outside and S. W. of the walled city, and finally to the South of the town are the barracks and the aerodrome of the 5th Division of the army. For the journey from Khorāt to Phimai,

ponies, bullockcarts and a guide are necessary items. When I, some few years ago, was stationed in Khorāt, you could get a pony, including saddle, for 2 Ticals and a bullockcart for 3 Ticals a day; the guide will probably cost you another couple of Ticals a day. To get these things you must approach the governor who no doubt will be glad to assist you. The best thing, however, will be to let the caretaker of the consulate arrange matters. I consider one pony for yourself, one for the guide and two bullockcarts amply sufficient for your trip. The distance from Khorāt to Phimai is, by the road I went in 1918, fifty six kilometres, and you can of course easily cover that distance in one day, if on horse-back and without any luggage, but I recommend you to travel by easy stages; so much the more as the roads are usually in a very primitive state; it will then take you $2\frac{1}{2}$ days to reach Phimai. I will now presume that we are ready to start, so we leave our comfortable residence at 6 o'clock in the morning and ride followed by our guide through the old walled city, entering by the Western gate called Pratu Chom Pon, passing the lively business quarter and leaving by the Southern gate called Pratu Chainarong or Phi. The last name "the gate of the dead" it has got because all dead have to be carried out through this particular gate, to do it by any of the other gates would call down calamity on the town and its inhabitants. Not far from the town we skirt a large swamp called Hua Talē, which stretches far away to the S. E. of the town, and follow the "tāng luang" or government road which goes from Khorāt to Buriram and which is provided with poles on which the distance for every 10 Sen (400 metres) is indicated. At Salā Nok Hong, 12 kilometres from Khorāt, we stop and take our combined breakfast and tiffin and in the afternoon another 7 kilometres bring us to Tā Chāng (Elephantford) the "port of Khorāt", a village with a gendarmerie post lying at a point of the Mūn river, where this—for some few months every year—begins to be navigable. We find accommodation in a resthouse belonging to the Mūn river Navigation Company. While the scenery between Khorāt and Tā Chāng is open country dotted with villages and abounding in broad paddyfields, it is not so between Tā Chāng and Phimai where it mostly is high forest-covered land: indeed we pass through the edge





Columns in a gopura.



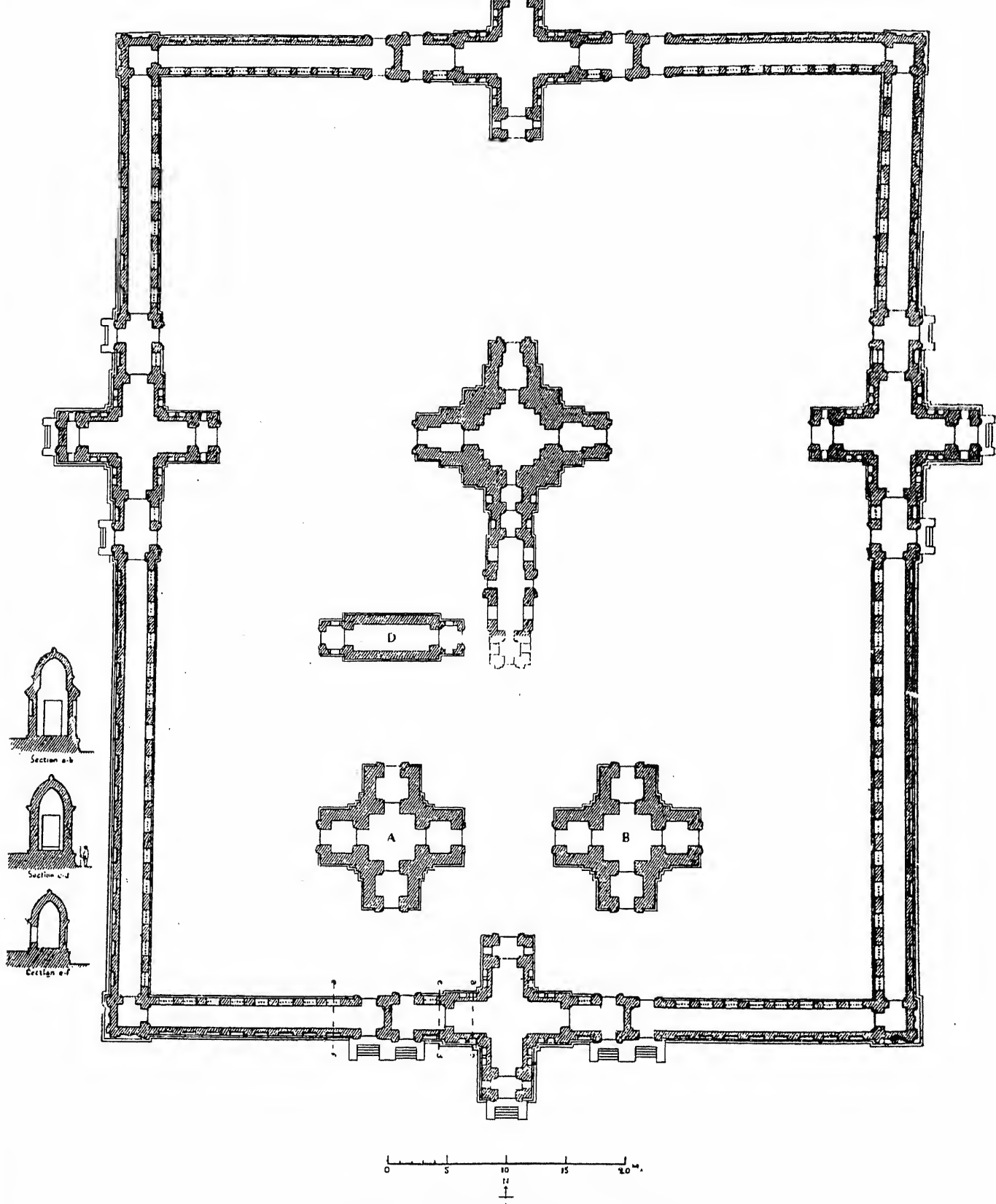
Carved door frame in Central tower.

of the great forest Kōk Luang, which from the big Southern plain Tung Kadēn stretches Northwards stopping only at a short distance from the Mūn river, while it Westwards continues until it blends which Dong Phraya Fai and Eastwards till it meets the forests of the Ubon province. This huge forest which seemingly is deserted holds many interesting things not the least being the many old cities, some built in squares, and others in rings, but that is another story. The second day after a ride of 13 kilometres we stop in the village of Nong Tayoi, where we get our tiffin under the splendid shady mango trees in the Wat. In the afternoon, having done another 13 kilometres, we leave the "tāng luang" and, turning N. E. for a short distance, halt at Ban Nong Krasang, where we camp outside the Wat at the edge of the Nong. We have now only 11 kilometres left to reach Phimai. In the early morning of the third day we trot through the dew dripping bamboo jungle, startling numbers of junglefowls and crow pheasants which abound here, and suddenly we meet the telegraph line running Eastwards from Khorāt to Ubon. We follow this for sometime but soon afterwards turn directly North and having crossed a lot of more or less delapidated wooden bridges spanning a number of small streams, we now see the ancient city of Phimai looming up against the sky with its ramparts and tall trees. We enter through the Southern gate—Pratu Chai—built of sandstone and just sufficiently high to let a howdah'd elephant pass through. The gate is an exact copy of those in Angkor the Great. We pass along a long and straight street lined on both sides with the houses and gardens of the inhabitants, besides several rather uninteresting wats. Right at the end of the street you see the Southern Gopura or entrance to the great temple with its terrace in front, S. W. of which is seen a building called "Phra Klang" or the "treasury" built of sandstone blocks or blocks made of "silālēng" this wellknown natural sort of cement. This building is certainly of Khmēr origin and was probably used for secular purposes. We do not enter the temple at once but walk our ponies round the exterior enceinte following the street which leads us to the Mūn river, on the high bank of which a somewhat neglected bungalow will be our residence during the time we stay in the town.

The town of Phimai is built in a square, surrounded in part by

earthen ramparts and broad ditches, and measures from 3 to 4 kilometres in circumference. The ramparts are provided with stone gateways on their Southern, Western and Northern faces, but on the Eastern Side they are broken by a large water reservoir called Srâ Phlêng. A part of the Northern rampart with its N. E. corner missing was probably destroyed by the river which here skirts the town. Parts of stone walls are seen on the top of the ramparts on both sides of the gateways on the Southern and Western face as also on the whole of the remaining part of the Northern one; these stonewalls were probably never quite finished. Outside the town the jungle reaches right up to the moats, the ground between the town and the forest in the South being intersected by numerous klongs and rivulets besides being very swampy. A watercourse called Nām Khem (the salt stream) which is probably an old branch of the Mūn river—or perhaps it was its maincourse long ago, who knows—though partly dry during the dry season, is in the rainy season sufficiently full of water to justify one in calling Phimai an island. This watercourse is a favourite breeding place of the crocodiles and it is not difficult to get hold of their eggs here. The temple lies a little to the North of the centre of the town, the space between its exterior enceinte and the city walls, being divided up in numerous square blocks separated by streets cutting each other rectangularly, testify to the skill of the old Cambodians in town planning. The town itself is like one forest of tall dipterocarpii, mighty broad crowned secular tamarinds or mangotrees and graceful sugar and cocospalms, swaying to and fro in the breeze; over all is cool shade and in many places you find small tanks filled with clear and fresh water. The inhabitants are the wellknown Khorāt Thai, active and industrious people, good weavers of silk and thrifty traders whom you meet with everywhere in Eastern Siam. Though they speak that rude Thai dialect which is peculiar to Khorāt, their dark complexion, and their manners and traditions all point to their descent from old Vimāya's Cambodian temple builders; some few speaking that tongue still live in the town and not many miles South of the town begins the Khmēr-peopled Ampho'-district of Nangrong.

Two enceintes surround the temple or innermost sanctuary, the exterior one consists of a stonewall from 3 to 5



Plan of the Sanctuary in Phimai
(After Lunet de Lajonquière).



The Sanctuary with towers and galleries viewed from South.

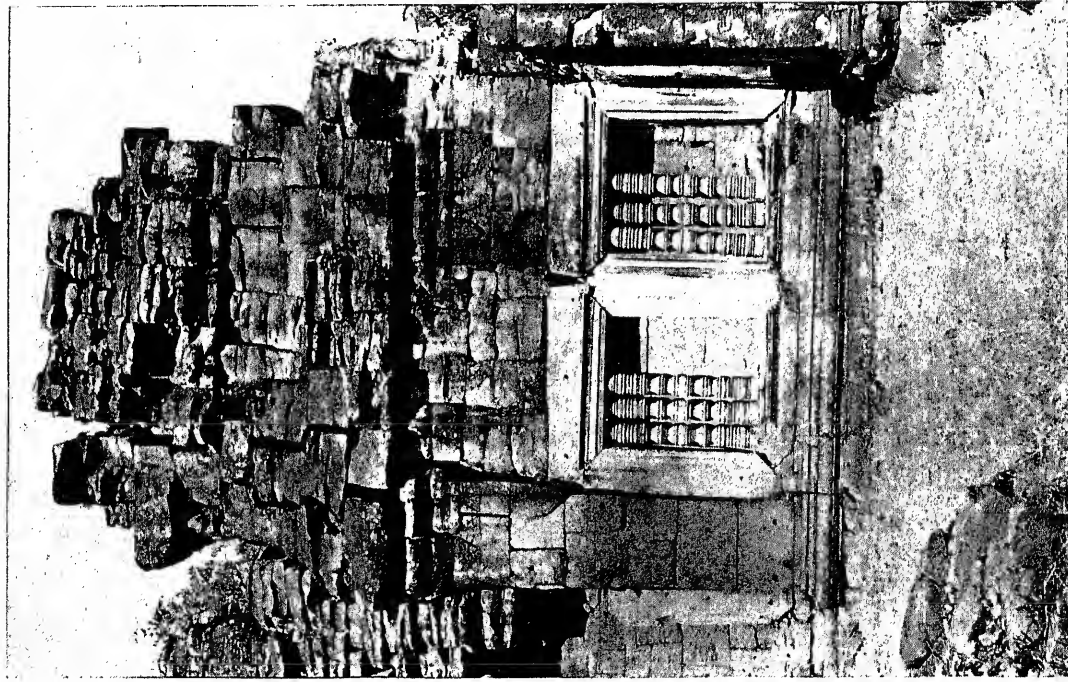


Part of galleries surrounding the three towers.

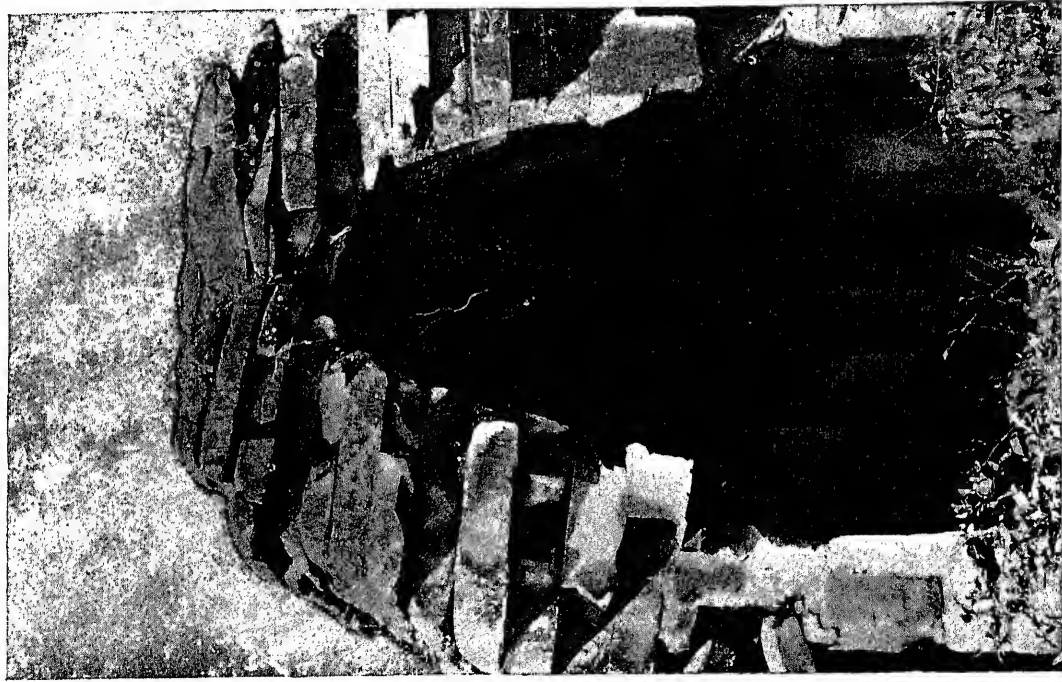
meters high, built in a square and still well preserved in parts. There are four gopuras or gate-buildings built in the crossform so well known from the Cambodian temple architecture. It is to be regretted that three of them are so badly damaged as to prevent actual passage through them: only the Southern one is in a comparatively good condition. A terrace flanked by lions and nāga's leads up to the last one which is in itself a small temple containing seven narrow chambers; on the faces of two of the pillars in the middle passage are seen short inscriptions in Khmēr. Having passed through this gateway we find ourselves in the first or outer courtyard and there in front of us lies the sanctuary itself enclosed by its galleries and with its three towers soaring up among gigantic old trees, a sight which fills ones heart with delight. Indeed a finer sight than that you will hardly find in this country. Before entering the sanctuary itself, let us cast a glance round the outer courtyard which surrounds the sanctuary and its galleries on all four sides. We notice close to and East of the Southern gopura a small and low terrace on which is lying a stonefigure of superhuman size representing Hari-Hara, a form under which Vishnu and S'iva combined, were adored during a certain period. Another one, also of Hari-Hara, lies close to the causeway leading from the Southern gopura to the sanctuary. Both to the East and West of this are seen some decayed Buddhistic temples of Thai origin, the bases of which are constructed of materials taken from much older buildings of Khmēr origin. Close to the Vihāra lying to the West of the sanctuary are seen remains of two buildings made of sandstone. Major Lunet de Lajonquière in his excellent description of Phimai (see "Inventaire descriptif des monuments du Cambodge" Vol. II p. p. 293-296) thinks that one of these was destined for the king and his courtiers, and the other one for the court-ladies during times of pilgrimage, when the king and his court came to worship here; a theory well worth believing. With regard to the Buddhistic temple lying N. E. of the sanctuary, this was, according to H. R. H. Prince Damrong, built by Prince Thēp Phiphit during his short reign as an independent ruler of Phimai, during the interregnum which prevailed in Siam after Ayudhya's downfall in A. D. 1767. Four big and deep squareformed "Srās" or water basins are also situated in the outer courtyard lying

between the corners of the galleries surrounding the inner courtyard and the enceinte of the outer courtyard. These basins are generally filled with clear and good water used by the citizens for drinking purposes. The building materials used for the different constructions were probably taken from the place where these basins now are as the subsoil here in Phimai—as nearly over all in the Khorāt province—consists of a red sandstone or laterite, just the material wanted by the old Khmērs for their grandiose temple buildings. Inside the courtyard grow many tall and splendid trees: tamarind, dipterocarpii and mango trees giving a welcome shade and adding to the picturesqueness of the place.

We will now contemplate the sanctuary itself with its three prangs or towers, its library or treasury and the roofed galleries which, built in a square, surround them and which measure 300 metres in circumference. Though most of the galleries have now crumbled away, some parts still in good preservation retaining the roof, give us a good idea of the manner in which they were constructed. The galleries are closed to the exterior and we notice here a row of false i. e. closed windows with curiously turned gratings. On the interior side they were open and provided with a row of columns supporting the roof. There are—or were—four gopuras built cross-wise like those of the temple enceinte already mentioned, but at present the Southern gopura is the only passable one and it is in this that we find the two most interesting inscriptions consisting respectively of 25 and 7 lines, the first one being on your right the second on your left hand, when you enter the gopura. These inscriptions, which are in Khmēr, date from the XI-XIIth. Saka (i. e. Mahāsakarāj whose chronology starts with A. D. 79), and tell us that in Mahāsakarāj 1030 (i.e. A. D. 1108) a certain Virendrādhipati-varman erected in this gopura, in the door of which the inscription is engraved, "The statue of the god Senāpati Trailokyavijaya, who is the senāpati (general) of the god Vimāya." That inscription proves that in 1108 the central sanctuary with its god Vimāy (= Phimai) was already constructed. Another interesting point is that the above date helps us to fix the date of the foundation of Angkor Wat which

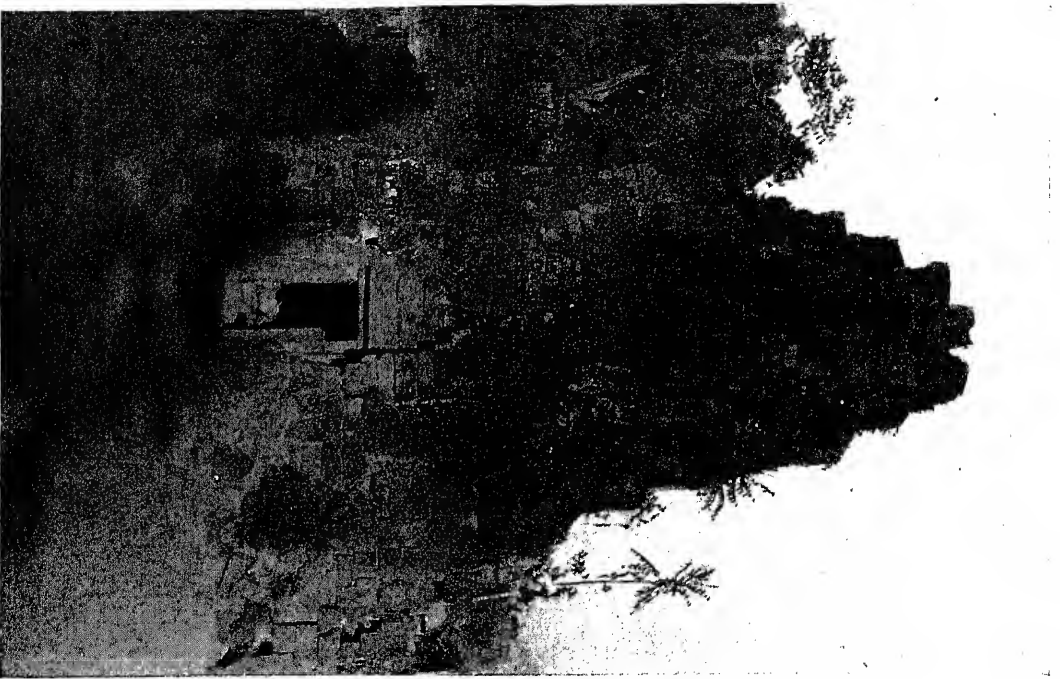


Exterior side of galleries with
"false" windows.



Interior of galleries
(Notice manner of construction of the roof).

Eastern tower.

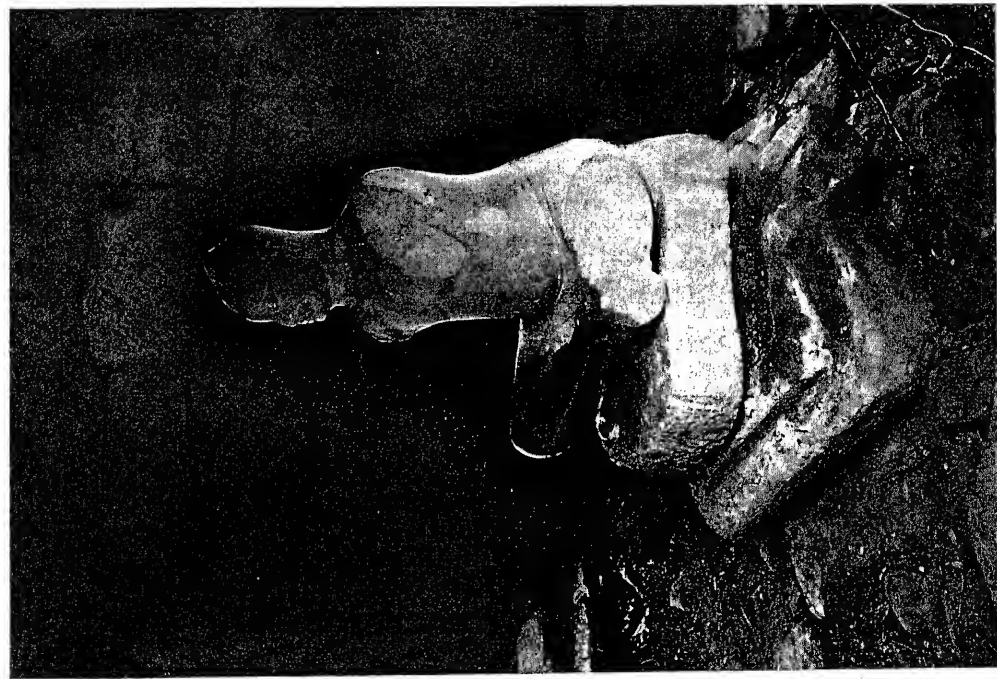


Five headed Naga.

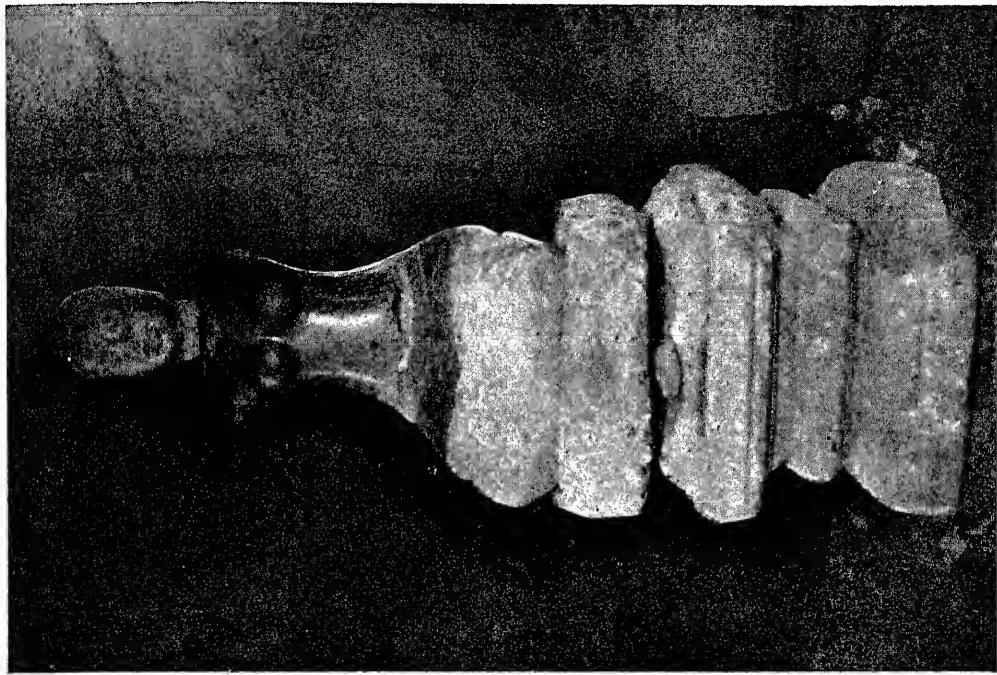


has hitherto been uncertain. The discovery of the two inscriptions (made by me, when I, in company with Messrs. R. Belhomme and J. J. McBeth, visited Phimai in December 1918) enables us to identify king Paramavishnuloka with Sūryavaman II (A. D. 1112-1162) and to locate the construction of Angkor Wat in the course of the XIIth. century. When I say that I found the inscriptions just mentioned, I am perhaps not quite right because Major Aymonier, the famous French archaeologist, *did* find three inscriptions, when he visited Phimai in 1884 (see his book "Cambodge II p.p. 122-124), but his impressions must have been very bad as he was unable to decipher more than a few words. The impressions taken during my visit in 1918 are not perfect, but still Professor Coedès has been able to decipher and translate a great deal of them, the contents of which are given above (See also Professor Coedès' article in "Journal Asiatique", Jan-March 1920 p. 96). When Major L. de Lajonquière visited the ruins he was not able to find any inscriptions at all and it seems as if he did not even believe in the existence of them. It is to be hoped that some exact impressions of all four inscriptions will soon be obtained to enable the experts to give us a full and complete translation of their contents. We are now in the innermost courtyard facing the three towers which, we notice, are built in two lines, two towers in the first and a third, the main tower, in the second line. The two foremost appear by their more primitive construction to be much older than the third and biggest one, being built of rugged laterite blocks and being quite unadorned on the exterior. While the Western tower is now empty, not so the Eastern one, inside which we find a splendid sitting male statue of superhuman size, the material of which it is made being a dark green stone polished smooth as marble. The execution of this statue with its powerful body and impressive but somewhat brutal looking face is so masterly done, that I venture to say, it easily holds its own with many of the statues from the old Hellas. It is a great pity that its arms and neck have been broken and its nose rather damaged, else, it would have been perfect. On its right hand is seen a female statue in a kneeling position, the execution of this statue is also very fine, but the head placed on its broken neck does not belong to it being too big and quite out of proportion. The

inhabitants of Phimai believe that the statues represent Thao Phromathat (Brahmadatta) and Nang Orapin (Aravinda = Lotus), the former being a legendary king of Phimai, the latter a capricious but fascinating girl of surpassing beauty won by Thao Phromathat after many tribulations. Quite a lot of places in the Khorāt province, as well in the Central as in the Western and Southern part, remind one by their names of this legend, as for instance Mu'ang Nangrong (Nang = girl, rong = cries) to take one, and the Lāo and Khmēr bards still sing to day about the king and his love. As far as I understand it, this legend has its counterpart in a much older Indian myth from which it probably is derived (like that about Phraya Pān and Phraya Kōng in Nakhon Chaisri), but one is perhaps allowed to believe that there is a substratum of truth in the local legend, Thao Phromathat being a Cambodian viceroy in Phimai and founder of the oldest sanctuary. We will now examine the main tower which is a superb example of the noble Khmēr architecture, resembling the towers of Angkor Wat and being of a much superior design and execution than that of the two other towers, and consequently of a more recent date than those. The height of the tower must originally have been not less than 18 metres, but the top having been destroyed, it now measures only about 13 metres (according to a tradition, the top was pulled down by invading Lāo hordes, which cannot have been others than the armies of the famous king Fā Ngom, who by the middle of the 14th century extended his sway from Luang Phrabang and Wiengchan Southwards over the Mēkhong valley and the territory of the four big North eastern provinces of Siam.) The tower is built of a finely cut sandstone of reddish or yellowgreyish colour which, when exposed to the changing light during day time, develops a whole scale of delicate tints finest to look upon at sunrise and sunset, or better still when the rays of a brilliant full moon streaming down through the wonderful tropical night is at play with its dazzling silverlight, creating a fairyland of the ruins and repeopling them with ancient Cambodia's splendours. On the top of the prang formerly crowned with the lotusflower some brickwork is seen. H. R. H. Prince Damrong in his small but excellent guide book to Khorāt (เที่ยวตามทางรถไฟเมืองนครราชสีมา) to whom I am indebted for certain historical information, says that



King Brahmadatta.



Nang Oraphin.

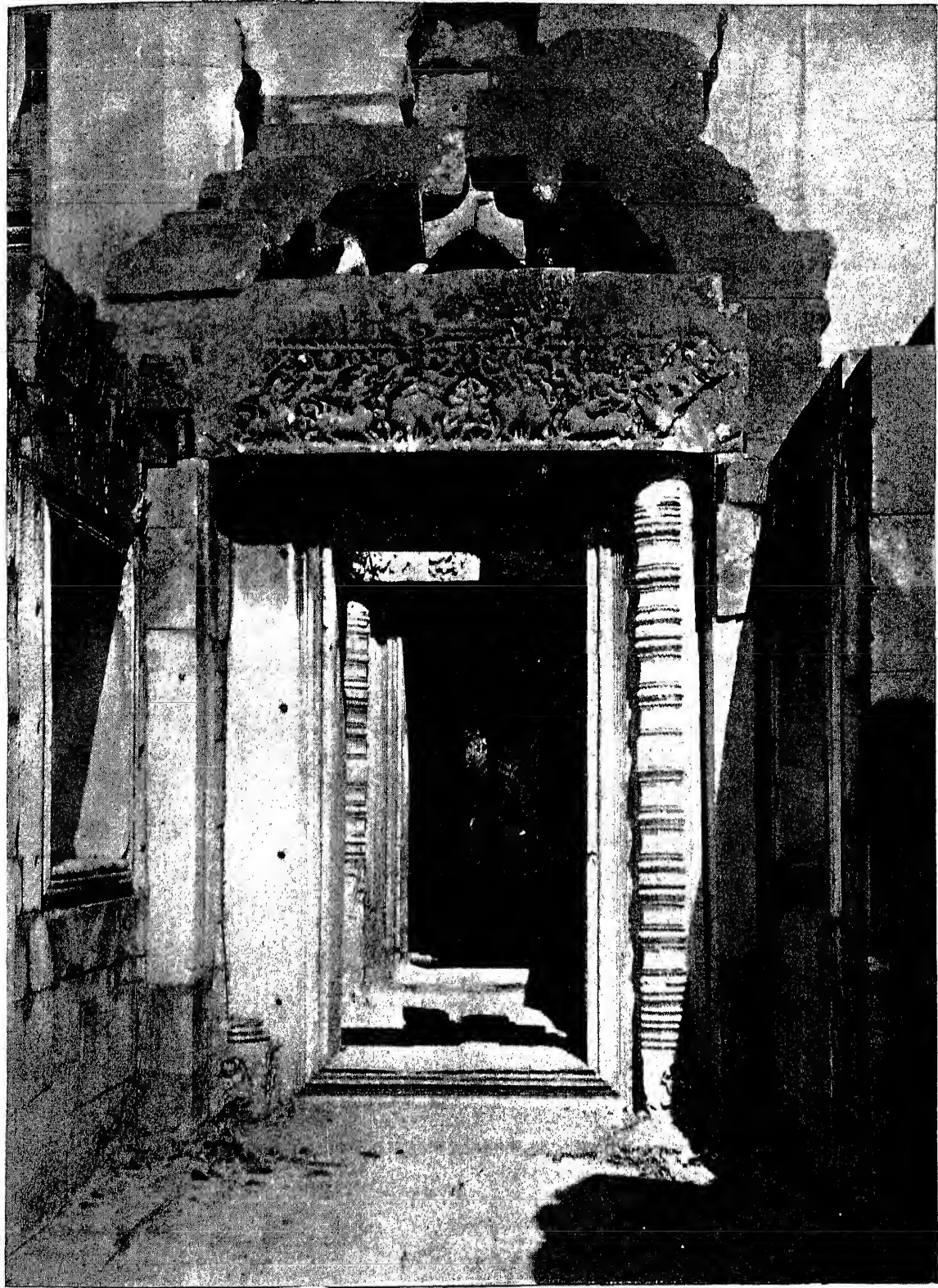


Central tower viewed from South.

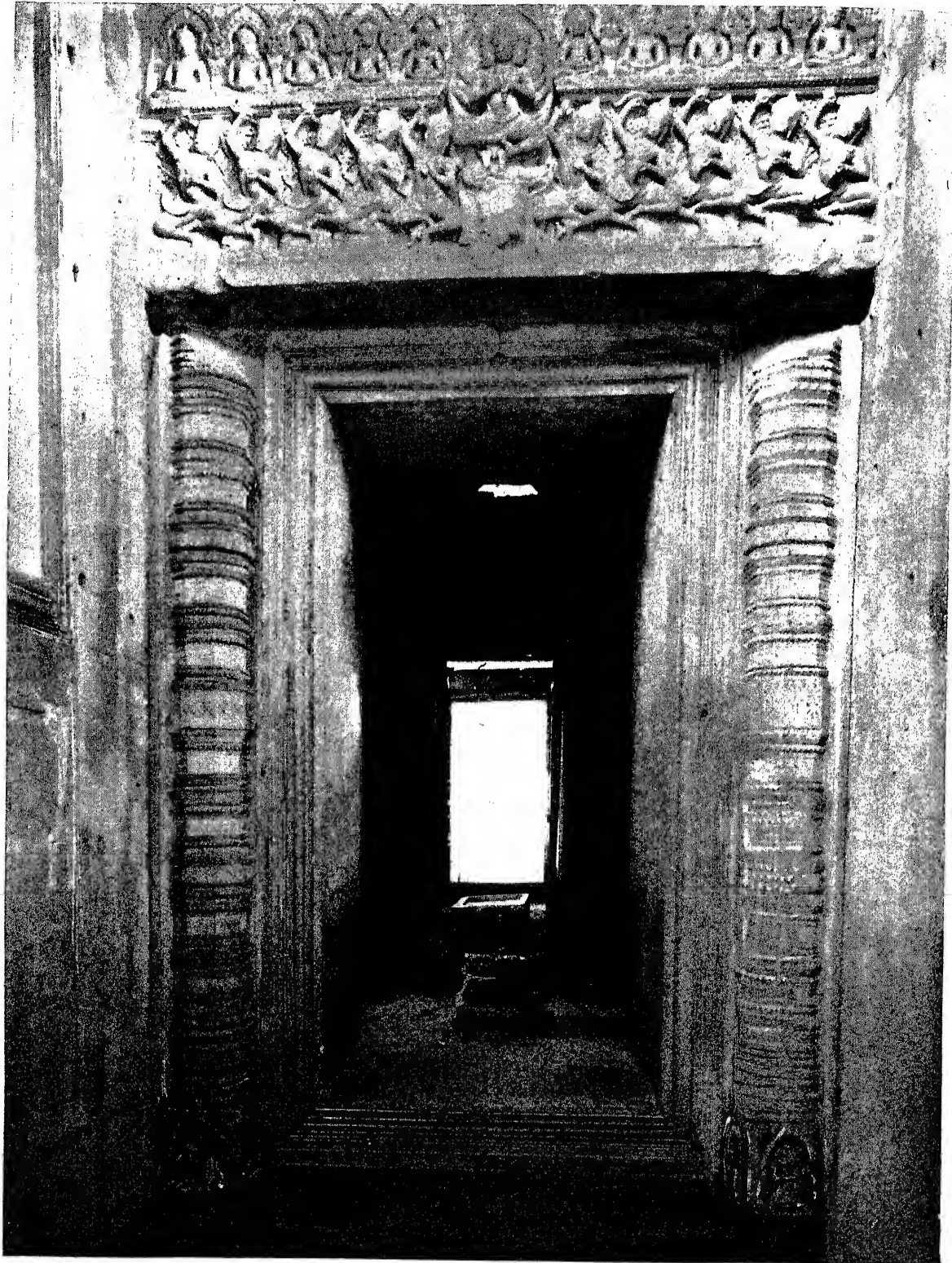
Prince Thēp Phiphit, the same who built the aforementioned Vihāra to the N. E. of the Sanctuary, also tried to repair the tower, to which some masonry bears witness. There are four doors all preceded by porches, the Southern, being the main one, is preceded by a much longer porch (*avant corps* is the appropriate term in French); all the doors are framed by beautifully carved or turned columns adorned with carvings of flowers or the graceful form of dancing girls. The vaulted interior is now empty, save for the modern "Roi Phra Buddha-Bāt", but must without doubt formerly have contained an image of the Buddha as on the lintels of all four doors there are carved scenes of Buddha's life. With regard to this, Professor Cœdès has been kind enough to furnish the following explanation: "On the lintel of the Southern door (of which lintel most of the upper half is missing), one still sees clearly Buddha sitting under the Bo tree, his right hand making the traditional gesture calling the earth as witness to his renunciation of all worldliness, under him are seen Māra, the tempter, with his army of elephants and demons riding on *rajas* attacking Buddha. The scene represents an episode from Buddha's life i.e. the victory over Māra or Māravijaya. On the lintel of the Eastern door is seen in the centre a god with 8 arms and 3 (or 4) faces dancing on two corpses lying on an elephant's skin. The Buddhistic (Mahayanistic) pantheon possesses a divinity the description of which corresponds well with this figure, with the exception of the number of the arms. This is Samvara (See Getty "The gods of Northern Buddhism" p. 127). This author says "He has four heads.....He is represented with twelve arms. The original ones crossed in Vajra-hūmkāra mudrā just as our figure does. The upper arms hold an elephant's skin, which entirely covers his back.....He steps to the left on the nude figure of a.....woman.....and on the right treads on a.....man." But as Samvara is almost unknown outside Tibet and China, I still hesitate to accept this identification though not rejecting it entirely. I ask myself if it is not possible that this figure is a special local form of Trailokyavijaya, because this divinity is mentioned in the inscription found in the Southern gopura. Trailokyavijaya has four faces, *eight* arms (just the number of arms of our figure), he dances on the bodies of Śiva and Parvatī, his two nethermost hands making the sign of vajra-hūmkāra mudrā.

(See Foucher "Étude sur l'iconographie bouddhique de l'Inde", 2^a part, p. 58). So far good, but the elephant's skin is not mentioned. Still in view of the popularity of Trailokyavijaya in India and Java and the fact that he is cited in the Phimai inscription, I am inclined to accept this last identification. To the left and right of the figure of Trailokyavijaya one notices two rows of figures, the upper consisting of sitting Buddhas the lower of dancing bayadères. The third scene, depicted on the lintel of the Northern door represents the statue of a god sitting in a temple to which god different persons come bringing offerings. The statue is that of a god sitting on the Nāga, the god wears a mukuta (crown), ear-pendants etc. and one is at the first view inclined to identify it rather with Vishnu than with S'iva, but there exist a great number of similar statues where the person sitting on the Nāga certainly is Buddha, though probably under the Mahayanistic form of Ādibuddha which generally is represented decked with the royal ornaments (See Getty "The gods of Northern Buddhism" p. 3). We now come to the last door, the Western, on the lintel of which is seen Buddha standing clad in royal garments in the attitude of the statues which at the present are called "Phra Chao song khrūang" (พระเจ้าสงครุาง) It is well known that these statues represent Buddha as Rājādhirāja or the king of kings in the apocryphical legend Jambupati (See the résumé in Finot's "Recherches sur la littérature laotienne," published in Bulletin de l'École Française d'Extrême Orient, XVII vol. No. 5, p. 66). If it really is this legend which is represented here, I think that Jambupati and his escort are to be seen in the upper row of figures to the left of Buddha, to the right, his palace is seen; the lower row (of dancing girls and musicians) represent perhaps the sensual enjoyments in the gardens (of Jambupati) so treasured by him before he came into the presence of Buddha."

The superstructure, which begins where the pilastershaped walls end with a sort of capital most beautifully executed, must originally have risen gradually like a sort of terraced pyramid up to the top, having on each of its steps rows of "acroteres" i.e. stones formed like "Bai simā's" and carved with



Central tower : Southern door.



Central tower: Eastern door.

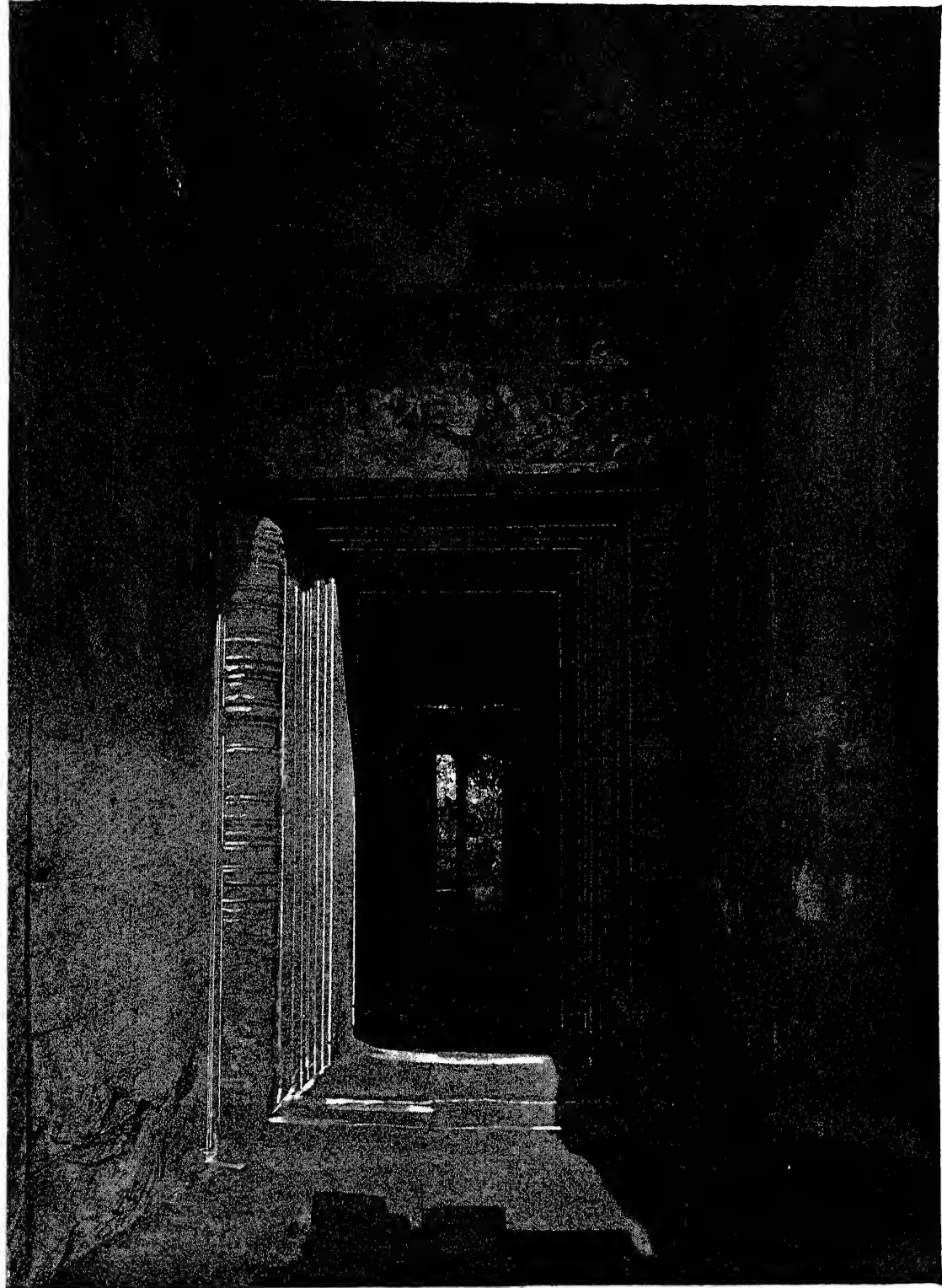
figures of rishis (Siamese: *rūsi*=hermit) or many headed snakes, of which a number are still to be seen in their original places, and finally, on each of the four faces of the tower and just over the porches, a huge Garuda—the mount of the god Vishnu—is seen.

The last building to be mentioned is the library or treasury, a small rectangular structure lying with its longitudinal axis East and West, and close to the West of the Southern porch of the main tower, this building is now quite tumbled down and presents only a confused heap of stones. But strewn on the ground round the building lie a lot of sculptured stones fallen down partly from the top and partly from the porches of the main-tower, among them are lintels on which are depicted different scenes, here the heroic fight between Bāli and Sugrīva with their bows, their human and monkey warriors and the war chariot, a wellknown episode from the Indian epic called Rāmāyana, which is still played by the Cambodian, Javanese and Siamese lakhons of to-day; or there one sees the god Indra sitting on the threeheaded elephant, there again another god sitting on the head of the monster Rāhu and finally a row of standing lions and so on. A patient research will reveal a lot of more beautiful details gladdening the heart of any lover of art or archaeology. It will also be noticed that the present surface of the innermost courtyard does not represent the original one which lay considerably lower; by the care of a former thoughtful Nai Ampho' the earth has been dug away at the base of the Northern face of the maintower, showing the original base of this as well as the stonepaved courtyard and also showing that the porches were approached by flights of steps.

Outside the temple, between this and the river, i. e. North of the temple, lies the public school (Rongrien Kulānō) on the verandah of which is seen a collection of many interesting things namely a standing four-armed statue wearing S'iva's headdress and a standing fourarmed statue wearing Vishnu's mukuta, both statues are of natural size and, though the arms are broken, of a very good execution. The heads said to belong to Thao Phromatat and Nang Oraphin are also kept here as also a very big female head of a third statue (this last one, as also some other fragments of statues lying in the Eastern tower may have belonged to statues placed formerly in the now empty Western tower). Some ancient pottery: jars of the

kind called "Hai Khā" as well as some tall elongated vasselike ones are seen here too, but the most interesting piece is a fine statue of a woman in a standing position, wearing a skirt ("pā sin"), necklace and a mukuta on her head, the face with its aquiline nose and full lips is smiling with a mysterious and blissful smile. This statue is called Nang Lavu and used formerly to be in a place called Kōk Lavu, some 40 kilometres to the Northeast of Phimai, where a watercourse called Lam Plaimas falls into the Munriver. As far as I know there are no traces of any sanctuary there, it was just a solitary statue standing in the forest and though the place was,—and is,—far away from any human dwelling, the statue used to be visited on moonlight nights by young Lāo bards (Moh Lam) who played on their khēns (reedflutes) and sang lovesongs to her, but so fatal were the consequences of this uncanny courtship that the young men once returned to their native villages were attacked by evil fevers, soon afterwards to die. The jealous and resentful Lāo damsels therefore forced the village elders to remove the villages further East to be outside the baneful and magnetic influence of Nang Lavu and finally the Nai Ampho' caused the statue to be brought to Phimai to its present abode, where it seems to have lost its influence. So far the popular tale told me one evening when I sat by the campfire. The name Lavu reminds one about Lophburi's, old name Lvo, of the inscriptions. May be the name has some historical connection with that other old Khmēr city which is still more ancient than Phimai itself! I may add that another curiosity is to be seen near Phimai; about half an hour's paddling upstreams there grows on the left bank of the Mūnriver a huge and splendid Banyantrée called Ton Sai Ngām: seen from a distance it resembles a mighty green cupola, and it is said, that under its shade a whole company at war strength can find rest. Her late Majesty the Queen Mother visited it on her trip to Phimai in 1912.

Before concluding this paper some few words about the scanty historical information which we possess about Phimai may prove useful. As will be seen from the inscriptions, this place was undoubtedly the capital of a big province or petty kingdom subject to Angkor the Great about the year A. D. 1100, as it probably had been for several centuries before that time, it is moreover reasonable to



Central tower: Northern door.



Central tower: Western door and the "Roi Phra Phuttha Bāt".

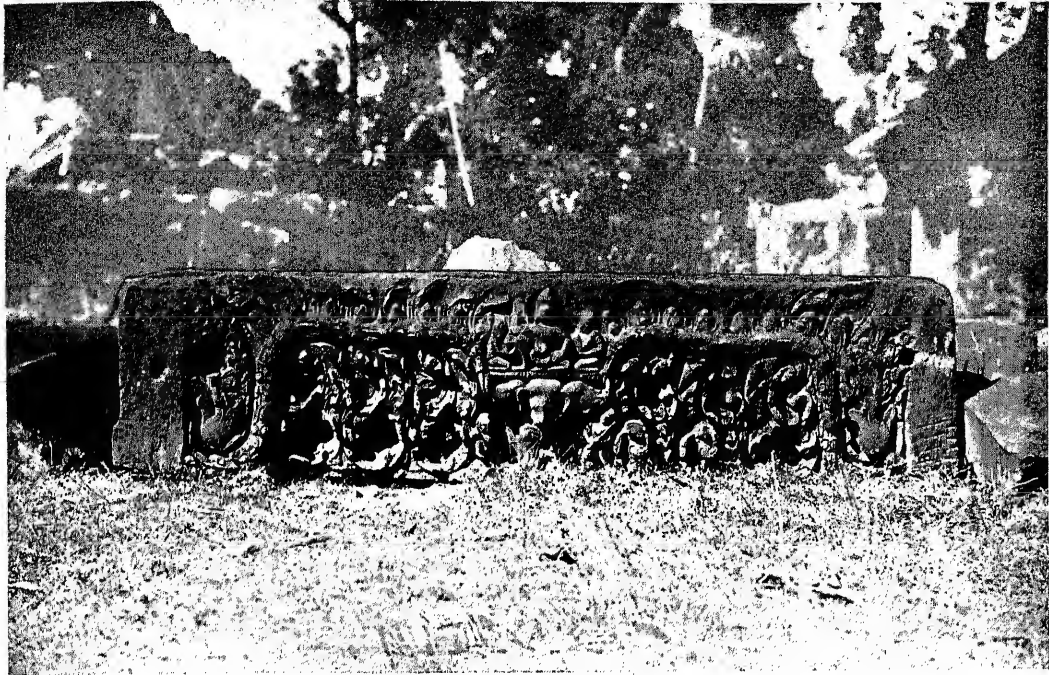
believe that Phimai is a very ancient town of the Khmērs, who in fact ruled over the whole of the Mūn valley long before they (about A. D. 600) went down and conquered Funan i.e. the present Cambodia which last, inhabited by a kindred race, once embraced the whole of modern Siam as well as the Mēkhong valley. When King Rāmakhāmheng engraved his famous inscription in Sukhothai A. D. 1292, the present provinces of Khorāt and Ubon were still under Khmēr-dominion. Later on, during the wars between Phra Chāo Utong or Rāmātibodi I. of Ayuthia (A. D. 1349-1369) and Phra Parama Lampongse of Cambodia, the Siamese conquered the territory of Khorāt but for quite a long time their rule was confined to the Western parts of this province and Phimai may be supposed to have remained Cambodian for some time longer, though it probably once was temporarily conquered by King Chāo Fa Ngom's Lāo armies as mentioned above. After this there is a gap in the Siamese chronicles and nothing is heard about Khorāt or Phimai before the time of King Phra Narai Mahārāj who, as related in the beginning of this paper, sent French Military engineers to fortify the town of Khorāt, making it to one of the Kingdom's strong fortresses destined to guard against possible invasions into the Mēnām valley from the East. Phimai is mentioned at that time as being one of the 5 Mu'angs subject to Nakhon Rajasima. The next time we hear about Phimai is after the fall of Ayudhya in 1767, when Prince Thēp Phiphit of the Royal House of Ayudhya tried to rally some of his countrymen against the Burmese invaders, but having suffered defeat in a battle at Paknām Yotagā (in the Prachin province) he fled to Khorāt where he—after many bloody intrigues—was raised to be ruler of Phimai. His kingship was however of short duration, as in 1775 he was defeated and captured by one of the armies which Khun Luang Taksin sent up against him. Since then Phimai has sunk down to the seat of an ordinary Nai Ampho' though it has recently been proposed to make it the seat a governor (phu va rajakar changvad).

The ruins of Phimai are of such beauty and importance that it is sincerely to be hoped the government will soon take steps to have them effectively protected against any acts of vandalism, though it must be said, to the honour of the different Nai Ampho's who have

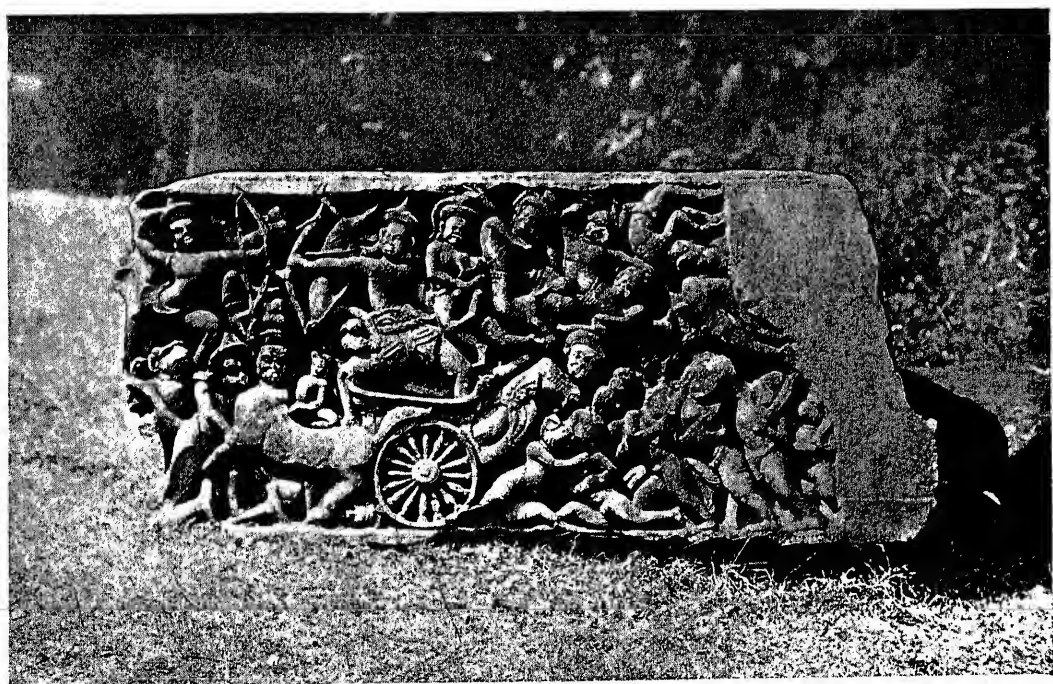
resided there, that they have all taken some interest in the protection of the ruins, and the population itself has still much veneration left for the great achievements of their ancestors. Finally I beg here to express my hearty thanks to my friend Professor G. Cœdès, the learned Chief Librarian of the National Library, for all his good advice and for the interesting notes supplied by him, to Messrs. J. J. McBeth and R. Belhomme who allowed me to use their excellent photographs which illustrate this paper, and especially to Prof. Finot, Director of l'École Française d'Extrême Orient who most kindly gave permission to reproduce the map of Phimai and the temple plans published by Major L. de Lajonquière in his "Inventaire descriptif des monuments du Cambodge, Vol. II."

Supplementary Note.

As will be seen from the preceding lecture, this was delivered as far back as the month of June 1920, but on account of various circumstances, among them the long delay caused by the reproduction in Europe of the illustrations which accompany this article, the publication was retarded until now. The conditions of travelling in that part of the country, i. e. the Khorāt province have, since the author lectured on the Phimai ruins, changed a great deal for the better by reason of the construction of the North Eastern line of the State Railways which ultimately will reach Ubon. Instead of travelling the whole distance from the town of Khorāt to Phimai by pony and bullockcart, it is now possible to continue by rail from the Khorāt Station to Tā Chāng. As stated in the first part of the lecture the train leaves Bangkok 9.48 a. m. and arrives at Khorāt 6.08 p. m. Here one must change for a train running to Tā Chāng: Departure 6.30; Arrival 7.19 p. m. at Tā Chāng. By doing so, one avoids the tedious journey (19 kilometers) along the cartroad from Khorāt to Tā Chāng. The first night has of course to be spent here at Tā Chāng which probably can still be done, as already indicated, in the resthouse belonging to the Mūn River Navigation Company, or in one of the temporary railway quarters. With regard



Lintel with sculpture representing the god Indra on his three-headed elephant.



Lintel with sculpture representing a scene from the epic of Rāmāyana.

to obtaining ponies and bullock carts for the further journey, the question is perhaps more difficult, but I should think that by approaching in advance the governor of Khorāt, this gentleman would be kind enough to give the necessary instructions for the arrangement of this to the Ampho' Tā Chāng. The second part of the journey is still to be undertaken as formerly described and will take about 1½ day. When returning from Phimai one has to spend another night in Tā Chāng; leaving this place the next morning by train at 6 o'clock, arrival in Khorāt 6.49 a. m. (i. e. at the railway station), change train for Bangkok leaving 7. 00 a. m. and arrive in the Capital at 3. 16 p. m.

His Royal Highness the Prince of Kambaeng Bejra, Commissioner General of the Siam State Railways, to whose kindness the author is indebted for much valuable information, for which he hereby begs to tender his best thanks, recently stated that there will be constructed a station near Ban Tām (บ้านต๋าม) which is about 32 kilometers South of Phimai, and that construction trains will be running to this station during the beginning of 1923: the whole line, terminating at Ubon, will be completed in 1927. H. R. H. who desires to facilitate excursions to Phimai as much as possible, is however studying the question of finding another station which will be nearer to Phimai than the first one named. A road, possible for motor vehicles, connecting this station with the town of Phimai is under consideration.

We may therefore hope that, within the near future, excursions to the interesting and picturesque temple ruins of this ancient city will be made possible without much inconvenience for the tourist. The traveller may have to make a first break of the journey in Khorāt or at Tā Chāng where we perhaps may expect the construction of one of these comfortable railway resthouses so well and favourably known; the second and third night to be spent in Phimai. Including the return journey to Bangkok the whole trip should easily be accomplished in five days instead of 7 days as now.

Bangkok, December 1922.

E. S.

Meteorological Observations Made in Chiengmai.**1910-1914.**

by

DR. A. F. G. KERR.

Meteorological records of the temperature, humidity and rainfall were kept more or less regularly in Chiengmai from March 1909 till August 1915, but, for the purposes of this paper, the five completed years from January 1st. 1910 to December 31st. 1914 are chiefly dealt with. Observations on the direction and force of the wind were made for three years, 1912 to 1914, and these are also included.

There have been several intervals when I was away on tour or leave and could not personally keep up the observations, but usually when on tour my wife has kept the records and when on leave in 1913 Mr. R. B. H. Gibbins very kindly took charge of the observations, so the figures are complete enough, as far as temperature is concerned, to give a good idea of the average climate of Chiengmai.

The temperatures were taken with thermometers examined and certified by the National Physical Laboratory at Richmond. Till July 12th. 1912 the thermometers were exposed in a wooden screen after the pattern of Stevenson's screen, thereafter in a grass hut built on the lines of the British Association model.

The tables for temperature and rainfall have been drafted to allow of ready comparison with those for Bangkok published by Dr. Campbell Highet in this Journal (Vol. IX, Pt. 2, 1921).

TEMPERATURE.

On comparing the Bangkok and Chiengmai tables it will be seen that the chief difference between the two places is the more marked extremes of heat and cold in Chiengmai. This is due mainly to the inland situation of Chiengmai, in fact Chiengmai has much more a continental climate than Bangkok. The latitude of Chiengmai, about 5° North of Bangkok, and its altitude, 1000 feet (300 metres), have also some influence on its temperature. The mean annual temperature of Chiengmai, 80.1° F. (26.8° C), is, however, only 2.5° F (1.4° C) less than that of Bangkok.

The differences are most marked in the cold and hot seasons, while during the rains there is very little to choose, as far as temperature goes, between Chiangmai and Bangkok. These differences are well shown by the mean daily range of temperature which keeps well over 30° F (16.7° C) from January till the end of April in Chiangmai; in Bangkok the range is 25.4° F (14.1° C) in January, dropping to 20.1° F (11.1° C) in April. In July, August and September the daily range in Chiangmai is only two or three degrees Fahrenheit more than in Bangkok.

The cool season in Chiangmai usually lasts from the middle of November till the middle of March. During this period the mean temperature keeps below 76° F. (24.4° C) and the nights are not only cool but often unpleasantly cold. The middle of the day is usually hot. The lowest temperature recorded was 41.3° F (5.2° C) on February 8th 1911.

In the hot season, from about the middle of March till the onset of the rains in May, the temperature towards mid-day is hotter than in Bangkok at the same season and the atmosphere is probably much drier but the nights are several degrees cooler. The highest temperature recorded was 109.8° F (43.2° C) in April 1913.

The temperature in the sun was taken with a black-bulb thermometer for some sixteen months, till, in fact, the thermometer was broken when it was not replaced. The highest temperature recorded was 152° F (66.7° C) in April 1909 and again in May of the same year.

RAINFALL.

In Chiangmai rain may fall in any month of the year but when it does do so outside the limits of the rainy season it usually falls in showers only, though occasionally two or three days continuous rain are experienced in the dry season. The most notable falls of rain in the dry season during the period under consideration were in 1910 when rain fell every day from the 8th. to the 11th. of March, the total fall for the six days being 3.910 inches (99.4 millimetres) and again in the following April when in four days from the 13th. to the 16th., 5.700 inches (132.1 millimetres) fell.

The rains commence in earnest about the middle of May. The earliest and latest dates for the commencement of the rains in the five years were the 8th. and the 17th. of May.

It is not so easy to fix the end of the rains as there is often a fairly long dry interval before they finally cease. It may however be put down as about the middle of November. The outside dates for the cessation of rains during the five years were the 4th. and the 26th. of November.

The mean annual rainfall for the five years was 42.629 inches (1082.7 millimetres). This is probably lower than the mean would be if the rain were measured over a longer period. The actual fall for each of the five years was as follows:—

1910	49.550 inches (1258.6 millimetres).
1911	38.180 inches (969.7 millimetres).
1912	51.195 inches (1300.3 millimetres).
1913	33.245 inches (844.4 millimetres).
1914	49.970 inches (1269.3 millimetres).

In not one of these years did the rainfall come up to the average of the previous nine years, 51.285 inches (1302.7 millimetres). The figures for these years were very kindly supplied to me by the Borneo Company. In the whole period of 14 years the year of greatest rainfall was 1908 with 64.49 inches (1638.0 millimetres) while 1913 with 33.245 inches (844.4 millimetres) had the least. Combining the two sets of figures the mean annual rainfall for the 14 years, 1901-1914, is 48.194 inches (1224.1 millimetres); more than seven inches less than the mean annual rainfall of Bangkok for the 17 years 1902-1918, 55.843 inches (1418.3 millimetres).

The average number of days on which rain fell, that is 0.01 inches or more, in a year is 111 as compared with 136.6 in Bangkok.

The largest rainfall recorded in any one day was 2.790 inches (70.9 millimetres) on the 15th. August 1914, the whole amount falling in about five hours.

HUMIDITY.

The humidity of Chiangmai is probably less than that of Bangkok. It will be noted how low the percentage of humidity drops

at midday in the dry season while still remaining fairly high in the early morning. The very high percentages in the mornings of the cold season are associated with heavy dews and mists.

DEW AND MIST.

A heavy dew falls every night throughout the cold season. This dew usually begins about the middle of November and lasts till the beginning of March, from then on till the commencement of the rains there is no dew.

A morning mist, sometimes very thick, is of frequent occurrence in the cold season, it usually clears up by 9 or 9.30 A. M.

HAZE.

There is a good deal of haze during the hot season. It is most marked when there are long spells without rain. From the middle of March on to the break of the rains Doi Sutep is seldom visible from Chiengmai, though its foot is only three or four miles distant, while by 4 P. M. the sun is a dull red disc which can be gazed at without discomfort. Probably most of this haze is due to smoke from forest fires. All the dry deciduous forests, which predominate in the vicinity of Chiengmai, are burnt over at least once every hot season, these fires producing a great quantity of smoke which diffuses through the atmosphere.

WINDS.

The winds of Chiengmai are chiefly local winds which depend more on local conditions than on the Monsoon. In speaking of these winds surface winds are referred to and not currents in the upper air.

The topography of Chiengmai gives the clue to the prevailing winds and may be briefly sketched. Chengmai Plain runs roughly North and South for a distance of about one hundred miles; its breadth from East to West is much less, averaging probably under 25 miles. The whole of the plain is surrounded by fairly high mountains.

Chiengmai lies close to the western border of the plain and in its northern third, almost at the foot of Doi Sutep, a mountain which rises to a height of 4500 feet (1350 metres) above the plain.

To the Southwest lies a very large mountain mass, at a distance of between 30 and 40 miles, containing the highest peak in Siam, Doi Angka, usually called on maps Intanon.

Theoretically, in a locality with such features, during sunny weather the heated air over the plain would rise and its place be taken by cool air coming down from the mountains all round. These winds from the mountains should not be felt till after mid-day, when the sun had well heated up the plain, and would be expected to increase in strength till the evening when they should begin to abate and cease altogether during the night. When staying, during the hot season, at the Hue Chāngkian Sanatorium the wind coming down the valley of the mountain is a very regular feature, it commences rather late in the afternoon and dies down usually between 8 and 9 P. M.

As Chiengmai lies near the western side of the plain and has high mountains to the Southwest the prevailing winds should be West and Southwest, most marked in the afternoon and dying down after sunset; while the mornings should be calm or with light winds blowing towards the mountain.

On referring to the tables it will be seen that the observed facts fit in fairly closely with the theory. At 7 A. M. 61% of the observations in the rainy season and 71% in the cool and hot seasons were calms while at 2 P. M. for the same seasons the percentages of calms were only 19 and 13 respectively. By 9 P. M. the percentage of calms had risen again considerably, being 58 for the rains and 49 for the rest of the year. No doubt if observations had been taken an hour or so later than 9 P. M. the percentage of calms would have been considerably higher. At 2 P. M. in the rains 57% of the winds are from the quarter South to West and for the rest of the year, at the same time of day, 51% are from the same quarter. In calculating the percentage of winds for each quarter the winds from each of the cardinal points are counted twice. For instance in the East to South quarter the East and South as well as all intermediate winds are counted, in the South to West quarter the South winds are counted again and so on round the compass.

It is not common to find a wind blowing steadily from the same point throughout the day. During the three years on only seven days was the wind blowing from the same point at all three observations.

The winds in Chiengmai are usually light, 4 or below 4 on the Beaufort scale; 47% of all the observations are recorded as calms, 46% as light or very light winds, that is 4 or less on the Beaufort scale, and only 7% as fresh or strong, 5 or more on the Beaufort scale. About half of these strong winds occur in the three months June, October and November, that is after the beginning of the rains and again near their end.

In the hot season gusty irregular winds are common and often take the form of small whirlwinds.

If observation were made on the top of one of the higher mountains much more constant and stronger winds would be found. The trees on exposed ridges at high altitudes show this by being stunted and permanently bent away from the prevailing strong southwesterly winds.

THE CLIMATE OF DOI SUTEP.

The summit of Doi Sutep is 4500 feet (1350 metres) above the level of Chiengmai and is, naturally, very considerably cooler.

The first meteorological observations taken on the top of Doi Sutep to be published were those of Dr. C. C. Hosseus who made temperature records there for 4 days in the first half of December 1904. These observations, together with others made by Dr. Hosseus elsewhere in Siam, were the subject of a paper by Dr. Gerbing, "Das Klima von Siam und die Ergebnisse der von Dr. Hosseus angestellten meteorologischen Beobachtungen" published in Petermann's Geographische Mittheilung, 1909, No. 6. Dr. Hosseus gives an extract relating to Doi Sutep from this paper in his book, Durch König Tschulalongkorns Reich. The following is a summary of this extract.

Temperatures were taken simultaneously in Chiengmai and on the top of Doi Sutep from 2 P.M. on December 10th. till 7 A.M. on December 14th. When these temperatures are tabulated it is seen the mean decrease in temperature between Chiengmai and the

top of Doi Sutep for the four days is at 7 A.M. 2.45° C (4.4° F), at 2 P.M. 13.3° C (23.9° F) and at 9 P.M. 6.2° C (11.2° F). This gives a mean fall for each 100 metres altitude of 0.533° C, which accords with the value for decrease of temperature with height found in mountains elsewhere, namely 0.56° C for every 100 metres (about 1° F to 300 feet). The difference in temperature at night is not so great owing to the heavy cold air collecting in the valley.

Taking it for granted that December is the coolest month in Chiangmai and April the hottest it may be assumed that the mean temperature on the top of Doi Sutep for December will be 12.2° C (54° F) and for April 22.3° C (72.1° F). May, which falls in the rains when the decrease of temperature with height is less, will have the same mean temperature as April.

Combining all the results it may be predicted that the Winter months on the top of Doi Sutep will have a temperature resembling that of our Spring months, though night frosts are hardly to be expected. The hottest months, April and May, on the other hand will have a mean temperature which we rarely reach in the Summer months.

Since the above paper was written a good many temperature records have been made on the top of Doi Sutep and these bear out, in the main, the predictions of Dr. Gerbing. It may be mentioned here that night frosts are not unknown in N. Siam, and at lower altitudes than the top of Doi Sutep. I myself experienced a frost one night in a small valley on the Baw Sali plateau in January 1904, the altitude being about 3000 feet. I believe these frosts occur in valleys at fairly high altitudes and sufficiently enclosed to act as pockets for cold air. Such a valley, however, is not to be found on Doi Sutep, whose slopes are steep, so night frosts there are improbable.

Our present knowledge of the temperature conditions on the top of Doi Sutep is almost entirely due to Dr. McKean, who, with the help of other members of the Mission Staff, has kept regular records of the temperature at Chawmchêng Sanitorium during the hot season. This sanitorium is within 100 feet of the actual summit, that is with regard to altitude. The thermometers were exposed under the shade of trees, no doubt temperatures so obtained tend to be more even, that is the minimal temperatures higher and the

maximal lower, than those of thermometers exposed in a screen, but such differences will not be large.

These records are spread over several years, from 1914 to 1922, and cover the latter half of March, all of April and most of May. The observations for January were taken by myself. In comparing Doi Sutep temperatures with those of Chiengmai mean temperatures have had to be used as most of the Doi Sutep records were made at a time when no records were being made in Chiengmai.

The following is a summary of the observations on Doi Sutep, month by month, as far as the records go.

January

In January 1915 temperatures were recorded on five days, from the 1st. to the 5th. A maximum thermometer was not used but the temperatures were taken between 2 and 3 P. M., about the time for the daily maximum to occur. The highest temperature recorded in the five days was 64.5° F (18.1° C) and the lowest minimum was 48.1° F (9.0° C). In Chiengmai for the same five days the highest maximum was 86.3° F (30.2° C) and the lowest minimum 53.8° F (12.1° C).

March

There are records for 42 days in March, all in the last half of the month.

Mean Temperature	69.5° F (20.8° C)
Mean of Maxima	76.0° F (24.4° C)
Mean of Minima	63.0° F (17.2° C)
Highest Maximum	83.0° F (28.3° C)
Lowest Minimum	52.0° F (11.1° C)
Greatest Daily Range	18.0° F (10.0° C)
Least Daily Range	2.0° F (1.1° C)

The mean temperature of Chiengmai for the last half of March is 82.2° F (27.9° C), the mean of the maxima 101.4° F (38.5° C) and the mean of the minima 62.8° F (17.1° C).

It will be noticed that the mean of the minima in Chiengmai is actually lower than that on Doi Sutep. Besides the difference in the method of exposure of the thermometers, already alluded to, it must be remembered that these means are not calculated from the same series of years. It is quite possible that either the Chiengmai

Marches were exceptionally cool or the Doi Sutep ones exceptionally hot; either case might make a difference of 4° or 5° F in the mean of the minima, which is all that is to be expected between the two places.

April

The observations in April cover 72 days, spread well over the whole month. In 1921 there are records for 21 continuous days and in 1922 for 29 days.

Mean Temperature	71. 0° F (21. 7° C)
Mean of Maxima	77. 5° F (25. 3° C)
Mean of Minima	64. 5° F (18. 1° C)
Highest Maximum	83. 0° F (28. 3° C)
Lowest Minimum	59. 0° F (15. 0° C)
Greatest Daily Range	19. 0° F (10. 6° C)
Least Daily Range	6. 0° F (3. 3° C)

The mean temperature on the top of Doi Sutep is thus 14.3° F (8.0° C) lower than the mean temperature of Chiengmai for the same month while the mean of the maxima is 24.9° F. (13.8° C) and the mean of the minima 3.6° F (2.0° C) lower than the respective means in Chiengmai.

In April 1914 temperatures were recorded both on the top of Doi Sutep and in Chiengmai for three days, from the 12th. to the 14th., with the following results.

	Chieng-	Doi
Mean Temperature	mai 84.5° F (29.2° C),	Sutep 68.2° F (20.1° C)
Mean of Maxima	„ 100.5° F (38.1° C),	„ 75.0° F (23.9° C)
Mean of Minima	„ 68.5° F (20.3° C),	„ 61.3° F (16.3° C)
Highest Maximum	„ 101.2° F (38.4° C),	„ 75.0° F (23.9° C)
Lowest Minimum	„ 67.6° F (19.8° C),	„ 59.0° F (15.0° C)

On April 11th. 1915 the minimum temperature was taken in both places, that for Chiengmai was 69.5° F (20.8° C) and for the top of Doi Sutep 60.0° F (15.6° C).

May.

The temperature records for May are not so complete as those for April. Temperatures were taken for 26 consecutive days, from the 1st. to the 26th., in 1919, but only the means are available :

in 1922 temperatures were taken on four days in the first week of the month.

Mean Temperature	69.1° F (20.7° C)
Mean of Maxima	73.9° F (23.3° C)
Mean of Minima	64.3° F (18.0° C)

In Chiengmai for May the mean temperature is 85.8° F (29.8° C) the mean of the maxima 98.7° F (37.1° C) and the mean of the minima 73.0° F (22.8° C).

There is no note in the May records as to the amount of rain or mist but it is probable that there were a good many cloudy or wet days which were accountable for lowering the mean of the maxima temperatures.

No records are available for the rest of the year. It is probable that the maximal temperatures are considerably lowered during the rains while the minimal may be slightly higher. In the rains the top of Doi Sutep is very frequently enveloped with clouds, even when fine weather is being experienced in Chiengmai; it has however fine intervals when it is clear of clouds.

I. Mean and Extreme Shade Temperatures in Chiengui for a period of 5 years (1910-1914).

	Mean		Mean of Maxima		Mean of Minima		Mean Daily Range		Greatest Daily Range		Least Daily Range		Highest Maximum			Lowest Minimum		
	F.	C.	F.	C.	F.	C.	F.	C.	F.	C.	F.	C.	Year	F.	C.	Year	F.	C.
January	71.8	22.1	88.7	31.5	55.3	13.0	33.6	18.7	49.0	27.2	20.9	11.6	1910	96.0	35.6	1914	42.5	5.8
February	75.1	23.9	93.2	34.0	55.7	13.2	36.8	20.5	49.1	27.3	21.5	12.0	1910	100.5	38.1	1911	41.3	5.2
March	80.1	26.8	99.4	37.4	61.7	16.5	37.9	21.1	48.0	26.8	13.5	7.5	1913	106.5	41.4	1913	51.5	10.8
April	85.3	29.6	102.4	39.1	68.1	20.1	33.2	18.5	44.0	24.5	13.5	7.5	1913	109.8	43.2	1913	60.0	15.6
May	85.8	29.8	98.7	37.1	73.0	22.8	25.7	14.3	37.5	20.9	8.1	4.5	1913	108.5	42.5	1910	67.0	19.4
June	84.4	29.1	94.8	34.8	74.1	23.4	20.7	11.5	27.5	15.3	5.1	2.8	1913	102.0	38.9	1914	68.7	20.4
July	83.0	28.3	91.9	33.3	73.9	23.3	18.3	10.2	27.6	15.3	5.4	3.0	1912	100.2	37.9	1910	69.8	21.0
August	82.0	27.8	90.5	32.5	73.5	23.1	17.0	9.5	27.2	15.1	1.3	0.7	1910	99.9	37.7	1911	69.3	20.8
September	82.2	27.9	91.2	32.9	73.1	22.9	18.0	10.0	24.8	13.8	8.5	4.8	1910	98.2	36.8	1910	69.1	20.7
October	80.9	27.2	90.6	32.5	71.2	21.8	19.4	10.8	28.2	15.7	7.9	4.4	1910	97.2	36.2	1912	64.4	18.0
November	76.9	24.9	88.0	31.1	66.0	18.9	22.1	12.3	33.6	18.7	5.3	3.0	1911	95.3	35.2	1910	56.8	13.7
December	73.4	23.0	86.9	30.5	59.7	15.4	27.0	15.0	36.4	20.2	10.5	5.8	1911	96.4	35.8	1910	49.4	9.6

Mean Shade Temperature for the five years 80.1° F. (26.8° C).

Mean Daily Range 25.8° F. (14.3° C).

II. Rainfall and Humidity in Chiengmai for 5 years (1910-1914)

	Mean Rainfall		Average Number of days on which rain fell	Greatest rainfall in 24 hours			Mean Relative Humidity in percentages		
	Inches	Millimetres		Year	Inches	Millimetres	7 A. M.	2 P. M.	9 P. M.
January	0.773	19.6	2	1912	1.390	35.3	95	46	88
February	0.006	0.2	0	1910	0.030	0.8	92	36	78
March	0.924	23.5	2	1910	1.180	29.9	84	31	61
April	1.506	38.3	4	1914	0.850	21.6	81	31	63
May	5.201	132.1	13	1911	2.150	53.8	86	47	80
June	5.857	148.8	16	1911	2.610	66.2	89	56	84
July	4.611	117.1	19	1912	2.025	51.4	88	59	88
August	7.792	197.9	20	1914	2.790	70.9	92	64	90
September	8.665	220.0	18	1912	2.725	69.2	93	65	93
October	3.924	99.7	10	1913	2.190	55.6	94	58	90
November	3.242	82.3	6	1910	2.000	50.8	97	55	90
December	0.127	3.2	1	1913	0.430	11.0	96	49	90

Mean Annual Rainfall for the five years 42.629 inches (1082.7 millimetres)

III Wind Observations Chiengmai 1912-1914

May to November (inclusive)

	7 A.M.	2. P.M.	9 P.M.
Calm	180	49	154
Variable	1	1	1
N	17	3	4
NE	17	24	12
E	10	12	3
SE	7	32	12
S	10	23	5
SW	32	91	57
W	4	2	8
NW	15	16	10

December to April (inclusive)

	7 A.M.	2 P.M.	9 P.M.
Calm	141	21	77
Variable	3	4	0
N	5	4	1
NE	6	13	5
E	5	9	7
SE	3	33	11
S	1	17	6
SW	13	46	31
W	7	12	14
NW	15	8	5

IV Percentages of Winds from each of the Four Quarters

May to November

	7 A. M.	2 P.M.	9 A.M.
Calm	61	19	58
N to E	39	19	17
E to S	24	33	18
S to W	41	57	63
W to N	32	10	20

December to April

	7 A.M.	2 P.M.	9 P.M.
Calm	71	13	49
N to E	28	18	16
E to S	16	40	30
S to W	36	51	63
W to N	47	16	25

Notes of the Quarter (January-March 1923.)

MEMBERSHIP.

The following five members have been elected :

H. S. H. Prince Bovoradej

Messrs. H. Brändli

Kim Phong

W. T. Lewis

E. Wyon Smith

The following six members have resigned :

Messrs. A. C. Anderson.

F. Chalant

H. Elsoë

F. J. Ford

A. Holm

J. Huese

ANNUAL GENERAL MEETING.

The 14th Annual General Meeting of the Society was held at the Society's room on Tuesday January 23rd. 1923 at 6 p.m.

Present: Mr. W. A. Graham (President) in the chair; Messrs. Ccedès, Cartwright (Vice presidents), Michell (Hon. Secretary), Raggi (Hon. Treasurer), Sewell, Walton (members of Council); Brewitt-Taylor, Davy, Duplatre, Fegen, Hale, James, Kerr, Lewis, Moore, Nicolas, Niel, Paulger.

The minutes of last Annual General Meeting were read and confirmed.

The Hon. Secretary then read the Annual report for 1922, after which the President invited comments or queries upon it. There being no response, he went on to say that it was not necessary to read the "statement of accounts" which they had all seen. In the absence of any remarks, he asked for a proposal to adopt the Annual report and Statement of accounts. This was done by Dr. Eldon James seconded by Mr. Sewell and passed unanimously. (The report and Statement are attached).

ALTERATION TO RULE.

The next business was a proposal to alter rule 21 which provided that a committee of four members of the Council should look after the publication of the Journal and the preparing of papers for publication in the same.

It was now proposed that this committee should be done away with, and an Editor appointed instead. The rule as altered would read as follows:—

“A Journal shall be published as often as practicable, which shall comprise a selection of the papers read before the Society, the Reports of the Council and Honorary Treasurer, and such other matter as the Council may deem it expedient to publish.

“The Council shall appoint one of their number as Editor of the Journal, who, as such, shall be responsible for the general arrangement and publication of the material selected by the Council.

“The Honorary Secretary shall assist the Editor in matters connected with the printing and publication of the Journal.

“Papers or communications presented to the Council may be of the following languages, viz:—English, French, German or Siamese.”

The President said that in the event of this alteration being approved, Prof. Cœdès the Hon. Librarian had kindly consented to become Editor.

The President then proposed that the alteration to rule 21 should be adopted, Mr. Walton seconded, and it was carried *nem. con.*

ELECTION OF OFFICERS FOR 1923.

Mr. Brewitt-Taylor proposed that the officers and Council should be re-elected for 1923 en bloc, with the addition of Dr. A. F. G. Kerr as member of Council. Mr. Davy seconded, and the motion was carried.

Mr. Raggi then made a statement that he had intended to resign the position of Hon. Treasurer at this meeting, but as he understood that his successor would not be able to take up the duties just yet, he had consented to “carry on” until he was ready.

The President expressed the regret of the council that Mr. Raggi had found it necessary to resign, and explained that Mr. L. Bisgaard had kindly consented to become Hon. Treasurer from April 1st.

ELECTION OF NEW MEMBER.

Mr. W. T. Lewis of the "The Bangkok Times" Ltd.

Proposed by Mr. R. Paulger

Seconded by Mr. Raggi

was elected an ordinary member.

RESIGNATIONS

The resignation of the following members was announced :

Mr. Herluf Elsøe (S. E. C.)

Mr. A. Holm (E. A. C.)

Mr. J. Huese, Great Eastern Life Assurance Co.

THE HON. AUDITORS.

Prof. G. Coedès proposed a hearty vote of thanks to Messrs. Brewitt-Taylor and Rae for having kindly undertaken the task of auditing the Accounts of the Society, which was carried unanimously. Mr. Brewitt-Taylor briefly replied.

There being no further business the meeting adjourned at 7 p.m.

Annual Report for 1922.

The year 1922 has been one of steady and continued progress in the history of the Society. The revival of interest in its activities, noted in the last Annual Report, has been maintained, to which the acquisition of a suitable headquarters has greatly contributed, giving it a local habitation in addition to its now thoroughly established name.

The Society has gratefully to acknowledge the continued interest of its Royal Patron—His Majesty the King, also of H. R. H. Prince Damrong, the Vice-Patron, who has, as always, shown his practical interest in the Society by his counsel and assistance on many occasions. It was a cause of peculiar satisfaction to the Society to be enabled in a small measure to acknowledge His Royal Highness' many kindnesses by presenting him with an address of congratulation on the occasion of his 60th birthday, which was celebrated in November.

H. R. H. The Prince of Kambaeng Bejra, Commissioner General for Railways, has accepted the position of Hon. Vice-President, and the thanks of the Society are due to H. R. H. for his practical interest in attending meetings and giving a display of cinema and other photographs dealing with Railway construction in Siam.

The Society hopes that the gracious patronage of His Majesty the King and the distinguished support of its Royal Vice-Patron and Hon. Vice-President, will result in the election of more Siamese members, whose knowledge in matters connected with their own country, would naturally be of great assistance to the Society.

MEMBERSHIP.

During the year, thirty-one new members have been elected to the Society, including His Royal Highness Prince Purachatra of Kambaeng Bejra as Honorary Vice-President, and Mr. Josiah Crosby, C. I. E., O. B. E., as an Honorary Member. The number of resignations during this year was eleven. The membership of the Society, therefore at 31st. December 1922 was as follows:

Ordinary	-	Honorary	-	Corresponding
205	...	15	...	8

making a grand total of 228. This shows an increase over the total for 1921 of 28.

ORDINARY GENERAL MEETINGS.

There "Ordinary General Meetings" were held, at which papers were read as follows:

March 2nd. "Pottery in Siam" by Mr. W. A. Graham.

March 29th. "Some Notes on Commercial Development in Siam" by Mr. W. Nunn.

October 2nd. Notes on "The Buddhist Votive Tablets of Siam" by Prof. G. Coedès.

The first two were held by permission at the Royal Bangkok Sports Club, and the last at the Society's room.

THE JOURNAL.

Four parts of the journal were published comprising Vol. XV, part 1 and 2, and Vol. XVI, parts 1 and 2.

A larger number of illustrations than usual were included with the parts, which added greatly to the interest—and also to the expense—of the journal. Besides the publications of papers read before the Society, two contributions of great scientific interest to naturalists were made—one by the distinguished Dr. Van Leeuwen of the Buitenzorg Botanical Gardens Java, on "The Insect Galls of Siam" and the other, a sequel to the first, on "The Thysanoptera from Siam and Indo-China" by H. H. Karry, of the same institution. These two papers are of great value in the field of original research. The preparation of the Journal for publication, which hitherto has been in the hand of a sub-committee of the Council, will, it is hoped, be made in future by Prof. G. Coedès who has kindly consented to act as Editor.

All the parts of the Journal published in any one year will, for the future, constitute a separate volume, the pagination running consecutively throughout.

EXCHANGES WITH OTHER SOCIETIES.

In 1921 the number of learned Societies and Libraries with which the Siam Society exchanges its journal was 16, but in response

to a circular sent out in August last, this has risen to 55. Exchanges now include the journals of such well known Societies as the Royal Asiatic Society (London), The Smithsonian Institution (Washington), The Société Asiatique (Paris), &c. &c.

At the request of the Bodleian Library at Oxford, the Society has presented a complete set of its Journal to that celebrated institution and has entered the name of that library in the list of those to whom in future copies will be supplied.

THE MON DICTIONARY.

Mr. Halliday's Mon-English Dictionary, the publication of which was undertaken by the Society some time ago, has now been completed and can be bought from the Society at Tes. 18 per copy. The printing of this important work, the first of its kind to appear, was undertaken by the Assumption College Press in conjunction with the learned and reverend Phra Khan Chandakanto of Paklat, under the supervision of the author and of Prof. Coedès, and is an important contribution to Philology. A number of copies have been bespoken by foreign Universities, learned bodies and individuals, the Vajirañāna National Library of Bangkok taking twenty copies. The edition comprises 500 copies.

THE "QUESTIONNAIRE"

In response to the "questionnaire" issued by the Society in 1921 asking for particular information regarding the manners and customs of obscure tribes in Siam, seven replies have been received, six from Chiangmai, kindly sent by H. S. H. Prince Bovaradej, dealing with the White Karens, Red Karens, Meao, Leu, Shans, and Yao, and another from H. E. The High Commissioner of Roi Ech about the Poo Thai, and the Kha, inhabiting the East of Siam. The first of these was translated by Mr. E. J. Walton and appeared in the journal, Vol. XVI, part 1, whilst the others are in course of preparation for publication.

STUDY SECTIONS.

The proposal of the Council to form "sections" or "groups" amongst the members, for the study of various scientific subjects, as

set forth in the circulars sent out at the end of last year, met with sufficient response to justify the formation of 5 sections as follows:—

1. Technology and Fine Arts.
2. Sociology.
3. Physical Anthropology.
4. Archaeology, Literature and Comparative Philology.
5. Agriculture, Transport and Travel.

It was not however, before the Society had acquired its new room, that the sections were able to begin operations. The opening meeting of each section took place in October, and meetings have been held periodically since. Sections 1, 4, and 5 have been well supported, but the other two have languished somewhat.

Section 5 (Agriculture, Travel and Transport) has had the energetic support of H. R. H. the Hon. Vice-President who has attended all the meetings and, as already mentioned, has contributed a very instructive display of cinema and other views dealing with transport in Siam.

It is to be regretted that these section meetings have not, so far, been better supported by the members. They afford an excellent opportunity for studying subjects connected with Siam and adjacent countries and for the exchange of informations regarding them. They offer also a means by which members, who may feel that the publication of an occasional journal is an inadequate return for their annual subscriptions, can make further use of the Society for their amusement and instruction. It should be pointed out that the sections are not confined to those who submitted their names, but that all members are entitled to attend the meetings at any time.

REPRESENTATION OF THE SOCIETY AT EUROPEAN CENTENARIES.

The Siam Society received an invitation to appoint delegates to assist at the celebration of the 7th. centenary of the University of Padua which took place last May, and requested Prof. F. L. Pulle of Bologna University (Corresponding Member) to attend on its behalf. A similar invitation was received from the "Société Asiatique de Paris" to take part in their centenary celebration in July. Prof. F. Lorgeou of Paris (Hon. Member) was invited to represent the Society and in due time reported that he had done so.

THE SOCIETY'S NEW HEADQUARTERS.

The acquisition of a "home" referred to in the opening paragraph of this report, is a matter of importance to the Society and constitutes a landmark in its history.

The need of a room or building where meetings could be held, and the library adequately housed, and which the Society could call its own, became urgent upon the revival of the Society after the war. The Library, through the kindness of H. R. H. Prince Damrong, had been for some time housed in the National Library building and General and Council meetings, for which the Bangkok Times Press Room was used for a time, were held latterly either at private houses, or, by the courtesy of its Committee, at the Royal Bangkok Sports Club. A suitable room was eventually found in Chartered Bank Lane on the first floor of the old Falek & Beidek building and this has been hired at a monthly rental of Tcs. 120 on a yearly agreement.

The room has been furnished, and the Library installed and, so far, has been found adequate for all purposes.

THE DANISH SOCIETY OF SIAM.

By agreement with the Danish Society of Siam, their Library has also been installed in the room and is used by the members on two evenings each week, those on which the Danish Society's Library is open.

The Danish Society also has the right of holding committee meetings in the room once a month by arrangement. A monthly rental of Tcs. 35 is paid to the Siam Society for the use of the room.

PRESENTATION TO THE VICE-PATRON.

On the occasion of the 60th birthday of H. R. H. Prince Damrong, our Vice-Patron, the Society presented him with an illuminated address of congratulation. The address which was the work of the Arts & Crafts school cost about Tcs. 600 which was subscribed by the members, and was presented by the President, Mr. W. A. Graham, on November 15th, at His Royal Highness' palace.

Photographs of the address and a report of the proceedings have already appeared in the Journal (Vol. XVI part 2).

OBITUARY.

The Society has to deplore the death of Dr. O. Frankfurter, which occurred in Hamburg in October. Dr. Frankfurter was one of the "founding members" of the Society and became President in 1906. He served in this capacity for many years and by his great interest and his contributions to the Journal did much to increase the success of the Society. A suitable letter of condolence has been sent to the widow on behalf of the Society.

MR. J. CROSBY.

Mr. J. Crosby, of the British Consulate General, who has been an active member of the Society for many years and who served on the Council since 1910, left the country during the year, having been appointed British Consul General at Batavia. The Council regrets the loss of his assistance but is assured of his continued interest in the Society. Mr. Crosby has been elected an Honorary Member.

Mr. R. Halliday the author of the Mon-English Dictionary, has also left Siam and removed to Burma.

STATEMENT OF ACCOUNTS.

From the attached statement of accounts it will be noted that expenditure has been exceptionally heavy during the year. This is largely accounted for by the cost of furnishing and fitting up the new room and producing the 4 parts of the Journal. The balance in hand amounts to Tcs. 2851.96 and, with subscriptions for 1923 to be received, the Society should have sufficient funds to carry on comfortably, during the new year. It might be mentioned that over forty members have not yet paid their subscriptions for 1922.

If this matter has been overlooked, this reminder may be sufficient to stimulate their memories.

PROGRAMME OF 1923.

There is a large amount of material in hand for publication, and the Council have pleasure in announcing that arrangements are

being made for producing a work by Prof. W. Craib of Aberdeen on "The Flora of Siam", which will be the authoritative work on this subject. It will be published in instalments and the entire work will probably take 3 or 4 years to complete. It is expected that Ordinary General meetings will be held 3 or 4 times during the year when papers of interest will be read by members. Particulars of these will be published in the daily papers.

Additions to the Library.

Commt. E. Seidenfaden.—Complément à l'Inventaire descriptif des Monuments du Cambodge pour les quatre provinces du Siam Oriental (Extr. B. E. F. E.-O.. vol. XXII)

From the author.

The Journal of the Royal Asiatic Society of Great Britain and Ireland, January 1923.

Journal Asiatique, XI^{me} série, Tome XX, Juillet-Septembre & Octobre-Décembre 1922.

From the Society.

Journal of the American Oriental Society, vol. 42, parts 1 & 2.

From the Society.

Rendiconti della R. Accademia Nazionale dei Lincei, vol. 31 November 1922.

From the Academy.

The Philippine Journal of Science, vol. XXII, parts 1 & 2, January and February 1923.

From the Editor.

Man, vol. 23, No. 1 & 2, January and February 1923.

From the Editor.

PUBLICATIONS OF THE COLUMBIA UNIVERSITY, NEW YORK, U. S. A :

C. S. Mee.—The foreign trade of China.

S. Takahashi.—A study of the origin of the Japanese State.

M. P. Lee.—The economic history of China.

S. Chen.—The system of taxation in China in the Tsing dynasty, 1644-1911.

C. Chu.—The tariff problem in China.

An-Sai Taia.—Treaty ports in China.

T. Watarai.—Nationalization of Railways in Japan.

W. Koo.—The status of aliens in China.

W. I. Chamberlain.—Education in India.

T. R. Pandya.—Education in Baroda.

U. Iwasaki.—The working forces in Japanese politics.

S. Ging Su.—The Chinese family system.

M. Chieh Hsu.—Railway problems in China.

- J. B. Lewis.*—The education of girls in China.
W. Pin Wei.—The currency problem in China.
H. L. Huang.—The land tax in China.
W. T. Dunn.—The opium traffic in its international aspects.
A. Shukri.—Mohammedan law of marriage and divorce.
G. P. Quackenbos.—The sanskrit poems of Mayūra.
W. E. Weld.—India's demand for transportation.
R. R. Stewart.—The flora of Ladak, Western Tibet.
Lucas.—The economic life of a Punjab village.
C. Shih.—Central and local finance in China.
F. H. Huang.—Public debts in China.
Chiang.—A study in Chinese principles of education.
S. M. Pagar.—The Indian income tax.
 Masters Essays from 1891 to 1921, 5 vol.
 University Bibliography from 1916 to 1921, 6 vol.

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นิราศ วัด เจ้า ฟา

ทำ เนียบ สมณศักดิ์ สังเขป

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